

土木研究所資料

第 579 号

鉄筋コンクリートスラブ橋自動設計プログラム解説

昭和 45 年 8 月

建設省土木研究所

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建設省土木研究所 企画部 システム課

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目 次

§ 1. 概 説	1
§ 2. 設 計 要 項	1
§ 3. スラブ橋全国調査について(昭和41年)	3
§ 4. 自動設計に用いる記号及び寸法	4
4.1 歩道のない場合	4
4.2 歩道のある場合	4
§ 5. プログラムの流れ	5
5.1 入 力 デ ー タ	5
5.2 図 化 プ ロ グ ラ ム	6
5.3 フ ロ チ ャ ー ト	9
5.4 アウトプットの型式	11
§ 6. 設 計 計 算 式	15
6.1 設 計 上 の ス パ ン	15
6.2 曲げモーメントの計算	15
1) 歩道のない場合	15
2) 歩道のある場合	16
3) 直交等方性平行四辺形に対する階差方程式による曲げモーメントの計算	19
6.3 断 面 算 定	27
6.4 主鉄筋量の計算	27
6.5 応 力 計 算	27
6.6 配力鉄筋量の計算	27
1) 歩道のない場合	27
2) 歩道のある場合	28
6.7 用心鉄筋量の計算	28
6.8 アンカー鉄筋量の計算	28
6.9 コンクリート量, 型枠量	29
§ 7. 設 計 細 目	30
7.1 歩道の取付部の幅について	30
7.2 床版配筋について	31
7.3 地覆鉄筋と歩道配筋について	31
7.4 鉄 筋 表 (1. m)	33
§ 8. 計 算 結 果	34
§ 9. 自動設計プログラム	36

昭和44年 鉄筋コンクリートスラブ橋自動設計

§ 1. 概 説

鉄筋コンクリートスラブ橋（以下スラブ橋と呼ぶ）は従来支間10m以下の小規模の橋に多く利用され別名溝橋と呼ばれている。

特に盛上区間などで地盤が悪く基礎の支持条件が不明確な場合に固定門形ラーメン橋に代る構造として用いられる。スラブ橋はラーメン橋やT桁橋に比べて次のような利点を持つている。

- (1) 多径間の場合には建設費が安い。
- (2) 桁高を小さくすることができる。
- (3) 設計が容易である（示方書で設計が製備されている）。
- (4) 配筋、型枠、コンクリート打設など施工が容易である。
- (5) 下部構造の形を適当に選べば外観上すぐれた設計となる。

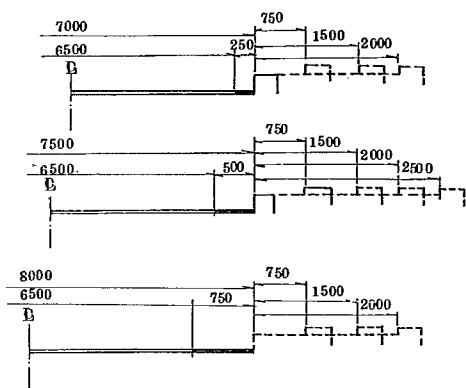
このような点を考慮すれば、今後スラブ橋の利用はますます高くなるものと考えられる。

§ 2. 設 計 要 項

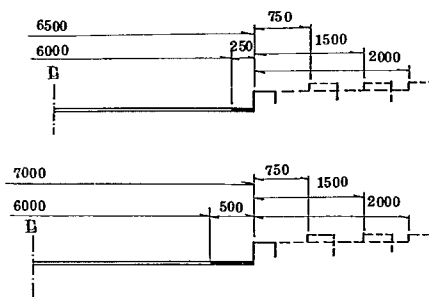
- | | |
|-------------|-----------------------------|
| (1) 種 別 | 鉄筋コンクリート道路橋 |
| (2) 形 式 | 単 純 ス ラ ブ 橋 |
| (3) 橋 格 | 1 等 橋 お よ び 2 等 橋 |
| (4) 衝 撃 係 数 | $i = \frac{20}{50 + L}$ |
| (5) 支 間 | 3.0 m ～ (0.5 m きざみ) ～ 8.0 m |
| (6) 幅 負 | 幅負は次のとおりである。 |

なお、地覆が実線のものとは歩道のない場合である。

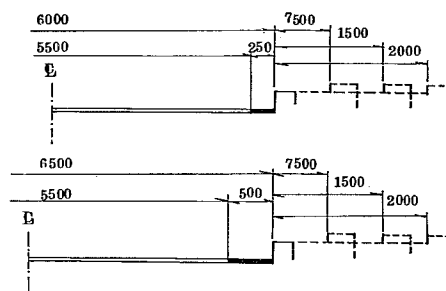
a) 第3種2級



b) 第3種3級



c) 第3種4級



(7) 斜 角

90° 75° 60° 45° 30°

(8) 震 度

$$K_H = 0.25 \quad K_V = \frac{K_H}{2}$$

(9) 材料の強度

コンクリート 圧 縮 強 度
許容曲げ圧縮応力度

$$\sigma_{28} = 300 \text{ Kg/cm}^2$$

$$\sigma_{ca} = 70 \text{ Kg/cm}^2$$

鉄 筋 材 質
許容引張応力度

SD30

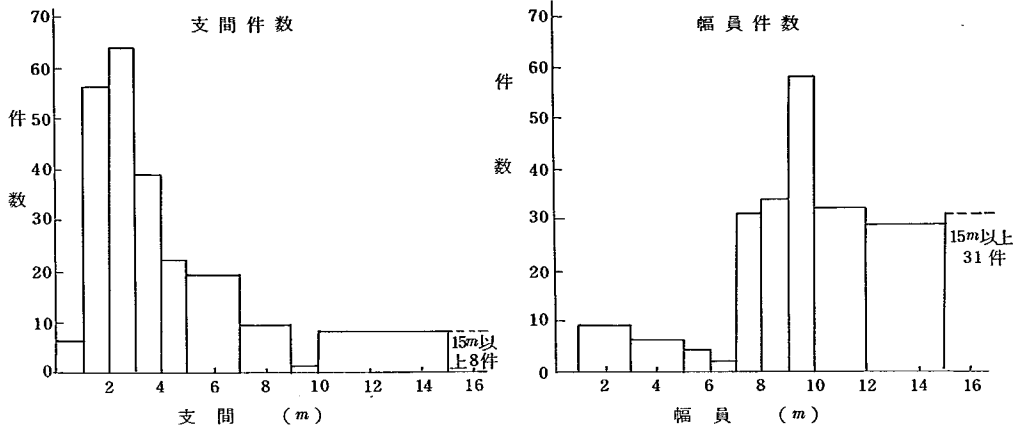
$$\sigma_{sa} = 1600 \text{ Kg/cm}^2$$

鉄筋とコンクリートの弾性係数比

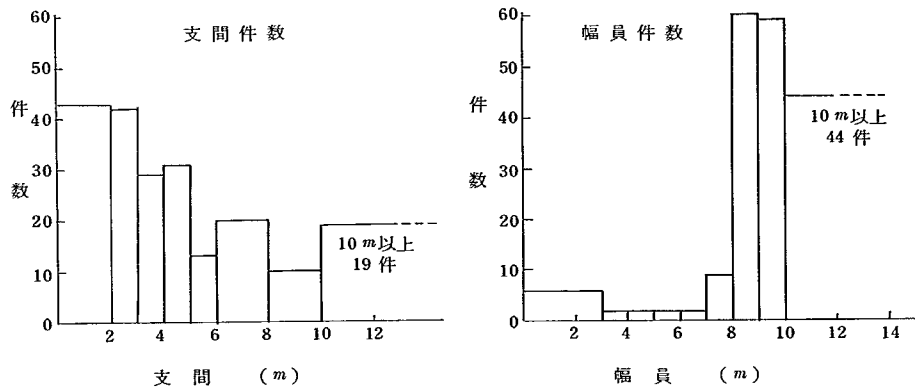
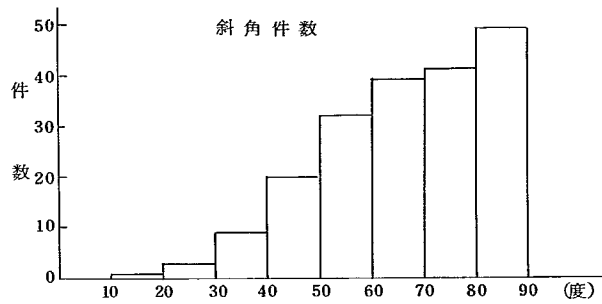
$$n = 15$$

§ 3. スラブ橋全国調査について（昭和41年）

(1) 直 橋



(2) 斜 橋



§ 4. 自動設計に用いる記号および寸法

4.1 歩道のない場合

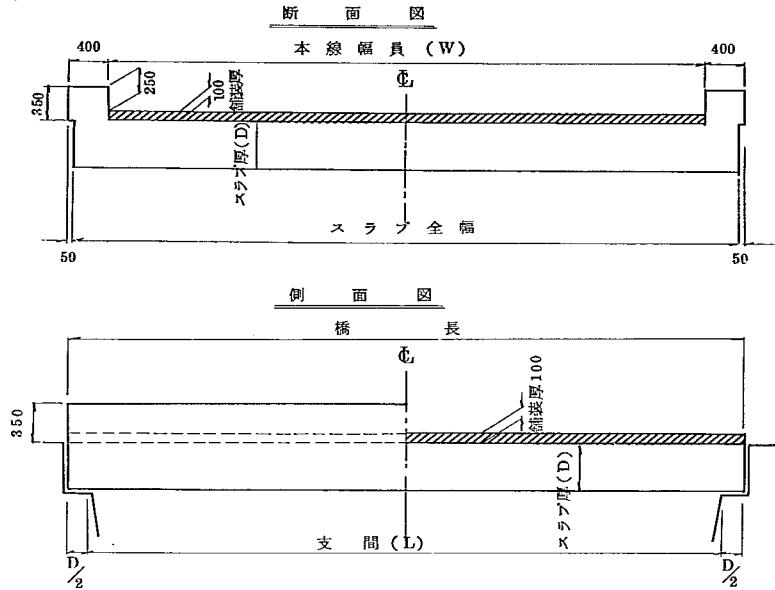


図 - 1

4.2 歩道のある場合

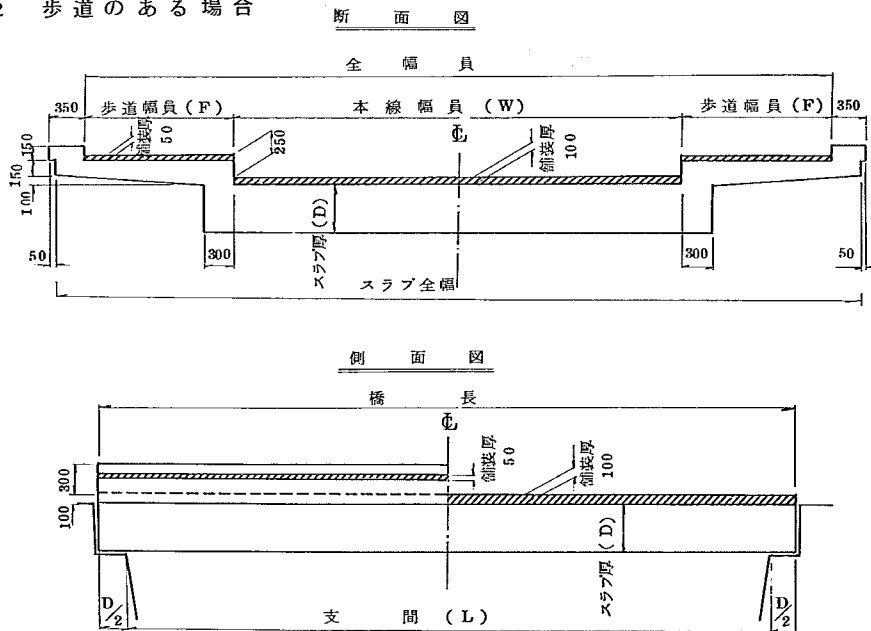


図 - 2

§ 5. プログラムの流れ

5.1 入力データ

```

begin      external PSENK, PMOVE, PREADY, POUT1, *PEN1, *PEN2, *PEN3, .....;
      real L, W, F, A, G, INDEX;
      procedure RCSLAB (パラメタ部);
          曲げモーメントを求めスラブ厚を決定する
      procedure HAIKIN (パラメタ部);
          所要鉄筋とピッチを計算する
      procedure TYPOUT (パラメタ部);
          鉄筋本数, コンクリート量, 型わく量を求める
      procedure SOKUMENZU (パラメタ部);
          側面図を描く
      procedure DANMENZU (パラメタ部);
          断面図を描く
      procedure HEIMENZU (パラメタ部);
          平面図を描く
      procedure ZAIRYO (パラメタ部);
          材量表, 鉄筋加工図等を描く

      START: READ(L, W, F, A, G, INDEX);
          L: 支間  W: 本線幅  F: 歩道幅員  A: 斜角  G: 橋格
          INDEX  0: 印字のみ
                  1: 図化, MT 格納  A3で図化
                  2: 図化, MT 格納  A1で図化
                  -1: MT 格納のみ
          if L=0 then go to END;
          断面の仮定, 断面諸定数の計算
          各手続の実行
          go to START;
      END:
end;

```

自動設計用

自動図化用

5.2 図化プログラム例

```

procedure SOKUHENZU(L,LL,U,UL,S,MAS,HHAS,HAS,YAS,D,YL,YE1,YE2,
                    YE3,YE4,HL1,HL2,HL3,HL4,HU1,HU2,HU3,HU4,N);
    real L,LL,U,UL,S,MAS,HHAS,HAS,YAS,D,YL,YE1,YE2,
        YE3,YE4,HL1,HL2,HL3,HL4,HU1,HU2,HU3,HU4,N;
begin
    procedure PM(X,Y):
        [PMOVEの略]
    procedure P(X,Y):
        [PSENXの略]
    procedure TEN(X,Y):
        [鉄筋断面を描く手続き]
    procedure SMZS(A,S,X,Y):
        [「側面図」という字を描く手続き]
    procedure SKN(A,S,X,Y):
        [「支間」という字を描く手続き]
    procedure ZNT(A,S,X,Y):
        [「全長」という字を描く手続き]
    procedure DM(A,S,X,Y):
        [「断面」という字を描く手続き]
    procedure SCALE(X,Y,A,N):
        [縮尺を描く手続き]
    procedure SNPD(X,Y,A,N):
        [寸法線を描く手続き]
    procedure HG(X,Y,N,A):
        [数字を0°方向に描く手続き]
    procedure VG(X,Y,N,A):
        [数字を270°方向に描く手続き]
    procedure PHSEN(N,X1,Y1,X2,Y2):
        [破線を描く手続き]
    procedure HIKITE(X1,Y1,X2,Y2,S,N):
        [引出し線を描く手続き]
    procedure EFNN(X,Y,N,A):
        [円の中に数字を描く手続き]

    real A,LL1,D1,H,K,K1,DD1,X,Y,VL1,PP,SS1,SS2,SS3,SS4,SS5,L1;
    array XA,YA[1:3];
    if L≤10 ∧ L>7 ∧ W≤17 ∧ W>10 then A=100;
    if L≤10 ∧ L>7 ∧ W≤10 then A=80;
    if L≤7 ∧ L>5 ∧ W≤17 ∧ W>8 then A=80;
    if L≤7 ∧ L>5 ∧ W≤8 then A=50;
    if L≤5 ∧ W≤17 ∧ W>6 then A=100;
    if L≤5 ∧ W≤6 then A=50;
    LL1=LL*1000/A;
    H:=3.5*10/A; K:=15*10/A;
    D1:=D*10/A;
    K1:=5*10/A; DD1:=D1+K; X:=5;
    Y:=20; L1=L*1000/A; VL1=VL*1000/A;
    SS1=(L/10)*1000/A; SS2=((LL-L)-0.10)/2)*1000/A;
    SS3=(D-(3.5*2))*10/A; SS4=SS1+SS2+SS3; SS5=SS1+SS2;

```

パラメタ規則部

手続き宣言部

変数宣言部

縮尺および数値計算

```

PEN2:
  PM((LL1/2-30)*N,(DD1+25)*N); P((LL1/2-30+55)*N,(DD1+25)*N);
  SMZS(0,N,(LL1/2-28)*N,(DD1+25.3)*N);
  SCALE((LL1/2-28+40)*N,(DD1+25.3)*N,A,N);
  PSEN(0,0,LL1*N,0); PSEN(LL1*N,0,LL1*N,D1*N);
  PSEN(LL1*N,D1*N,(LL1/2)*N,D1*N);
  PSEN((LL1/2)*N,(D1+K)*N,0,(D1+K)*N); PSEN(0,(D1+K)*N,0,0);
PEN3:
  PSEN((K1*N),H*N,(LL1-K1)*N,H*N);
  PSEN((LL1-K1)*N,H*N,(LL1-K1)*N,(D1-H)*N);
  PSEN((LL1-K1)*N,(D1-H)*N,K1*N,(D1-H)*N);
  PSEN(K1*N,H*N,K1*N,(DD1-H)*N);
  PSEN(K1*N,(DD1-H)*N,(LL1/2)*N,(DD1-H)*N);
  PM((LL1/2)*N,H*N);
  for PP=0 step (HHAS*3*10/A) until (LL1/2-K1) do
    begin
      PSEN((LL1/2+PP)*N,H*N,(LL1/2+PP)*N,(D1-H)*N);
      TEN((LL1/2+PP)*N,(D1-H-0.3)*N);
    end;
  PM((LL1/2)*N,H*N);
  for PP=0 step (HHAS*3*10/A) until (LL1/2-K1) do
    PSEN((LL1/2-PP)*N,H*N,(LL1/2-PP)*N,(DD1-H)*N);
  PM((LL1/2)*N,(H+0.2)*N);
  for PP=0 step (HHAS*10/A) until (LL1/2-K1) do
    TEN((LL1/2+PP)*N,(H+0.2)*N);
  PM((LL1/2)*N,(H+0.2)*N);
  for PP=0 step (HHAS*10/A) until (LL1/2-K1) do
    TEN((LL1/2-PP)*N,(H+0.2)*N);
  PM((LL1/2)*N,(D1-H)*N);
  for PP=0 step (HHAS*3*10/A) until (LL1/2-K1) do
    TEN((LL1/2-PP)*N,(D1-H-0.3)*N);
  TEN((LL1-K1-0.2)*N,(H+0.2)*N);
  TEN((LL1-K1-0.2)*N,(D1-H-0.3)*N);
  TEN((K1+0.2)*N,(H+0.2)*N);
  TEN((K1+0.2)*N,(D1-H-0.3)*N);

  If S=90 then go to YY;
  PSEN(K1*N,(H+0.5)*N,(K1+YL1)*N,(H+0.5)*N);
  PM(K1*N,(H+0.5)*N);
  for PP=0 step (YAS*10/A) until YL1 do
    TEN((H+YB)*N,(H+0.7)*N);
  TEN((K1+YL1)*N,(H+0.7)*N);
PEN1:
  XA[1]=K1*N; YA[1]=H*N; XA[2]=(K1+(YE1*YE2)/A)*N;
  YA[2]=H*N; SNPO(XA,YA,-5*N,1);
  HG(K1*N,-4.2*N,N,YE1); HG((K1+3)*N,-4.2*N,N,YE2);
  HG((K1+7.5)*N,-4.2*N,N,YE3);
  HIKITE((YL1/2)*N,(H+0.5)*N,(YL1/2)*N,-7*N,7*N,2);
  EENN(-3*N,-5.5*N,N,10);
  If YE4=0 then go to YY;
  XA[1]=(K1+(YE1*YE2)/A)*N; YA[1]=H*N; XA[2]=(K1+YL1)*N;
  YA[2]=(H+0.5)*N; SNPO(XA,YA,-7*N,1);
YY:
  XA[1]=(LL1/2-HU3/A)*N; YA[1]=H*N;
  XA[2]=(LL1/2)*N; YA[2]=H*N; SNPO(XA,YA,-11*N,1);
  HG((K1+15)*N,-10.2*N,N,HU1);
  HG((K1+18)*N,-10.2*N,N,HU2);
  HG((K1+23)*N,-10.2*N,N,HU3);
  If HU4=0 then go to YY1;
  XA[1]=(LL1/2-HU3/A)*N; YA[1]=H*N; XA[2]=K1*N;
  YA[2]=-11*N; SNPO(XA,YA,-11*N,1);
  HG((K1-1)*N,-10*N,N,HU4);

```

構造線を描く

主鉄筋、応力鉄筋、
用心鉄筋等の鉄筋線
と鉄筋断面図を描く

```

YY1:
XA[1]:=(LL1/2)*N; YA[1]:=0; XA[2]:=(LL1/2+HL3/A)*N;
YA[2]:=0; SNPO(XA,YA,-11*N,1);
HG((LL1/2+10)*N,-10.2*N,N,HL1);
HG((LL1/2+14)*N,-10.2*N,N,HL2);
HG((LL1/2+19)*N,-10.2*N,N,HL3);
If HL4=0 then go to YY2;
XA[1]:=(LL1/2+HL3/A)*N; YA[1]:=H*N;
XA[2]:=(LL1/2+HL3/A+HL4/A)*N;
YA[2]:=H*N; SNPO(XA,YA,-11*N,1);
HG((LL1/2+HL3/A)*N,-10*N,N,HL4);
YY2:
PEN3:
for P=1 step 1 until 3 do
PHSEN(N,(K1+SS5)*N,(D1-H)*N,(K1+SS4)*N,H*N);
for P=1 step 1 until 3 do
PHSEN(N,(LL1-K1-SS5)*N,(D1-H)*N,(LL1-K1-SS4)*N,H*N);
PEN1:
XA[1]:=0; YA[1]:=DD1*N; XA[2]:=LL1*N; YA[2]:=DD1*N;
SNPO(XA,YA,16*N,1);
ZNT(0,N,(LL1/2-5)*N,(DD1+15.8)*N);
HG((LL1/2)*N,(DD1+15.8)*N,N,LL*1000);

XA[1]:=(LL1/2-L1/2)*N; YA[1]:=0;
XA[2]:=(LL1/2-L1/2)+L1)*N; YA[2]:=0;
SNPO(XA,YA,-16*N,1);
SKN(0,N,(LL1/2-5)*N,-15.2*N);
HG((LL1/2+2)*N,-15.2*N,N,L*1000);
XA[1]:=0; YA[1]:=DD1*N; XA[2]:=0; YA[2]:=0;
SNPO(XA,YA,-11*N,1);
VG(-10.5*N,2*N,N,(D+15)*10);
XA[1]:=LL1*N; YA[1]:=0; XA[2]:=LL1*N; YA[2]:=D1*N;
SNPO(XA,YA,6*N,1);
VG((LL1+5)*N,0.5*N,N,D*10);
PM(LL1*N,H*N); P((LL1+15)*N,H*N);
P((LL1+15)*N,-7*N);
P((LL1+15.5)*N,-5.5*N); P((LL1+15)*N,-5.5*N);
HIKITE((LL1/5+10)*N,H*N,(LL1/5+10)*N,-5*N,5*N,N);
EENN((LL1/5+14)*N,-3.5*N,N,1);
HIKITE((LL1/4-15)*N,(DD1-H)*N,
(LL1/2+10)*N,(DD1+5)*N,5*N,N);
EENN((LL1/4-11)*N,(DD1+6.5)*N,N,7);
HIKITE((LL1/2+10)*N,(D1-H)*N,
(LL1/2+10)*N,(D1+5)*N,5*N,N);
EENN((LL1/2+14)*N,(D1+6.5)*N,N,6);
YB:=D1-(35+50)/A;
HIKITE((LL1-K1-SS5-YB/2)*N,(D1/2)*N,
(LL1-K1-SS5-YB/2)*N,-5*N,5*N,N);
EENN((LL1-K1-SS5-YB/2-1)*N,-3.5*N,N,2);
DM(0,N,(LL1/4-9)*N,(DD1+10)*N);
PRINTS('SOKUMENZU**QJARI'); CRLF(10);
end;

```

引き出し線、寸法線
数字、文字等を描く

側 面 図 縮尺 1/50

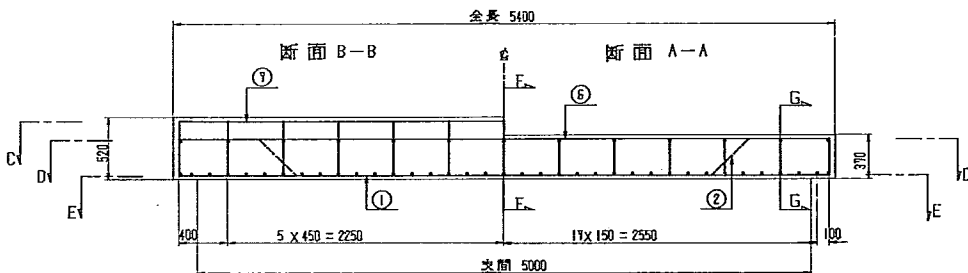
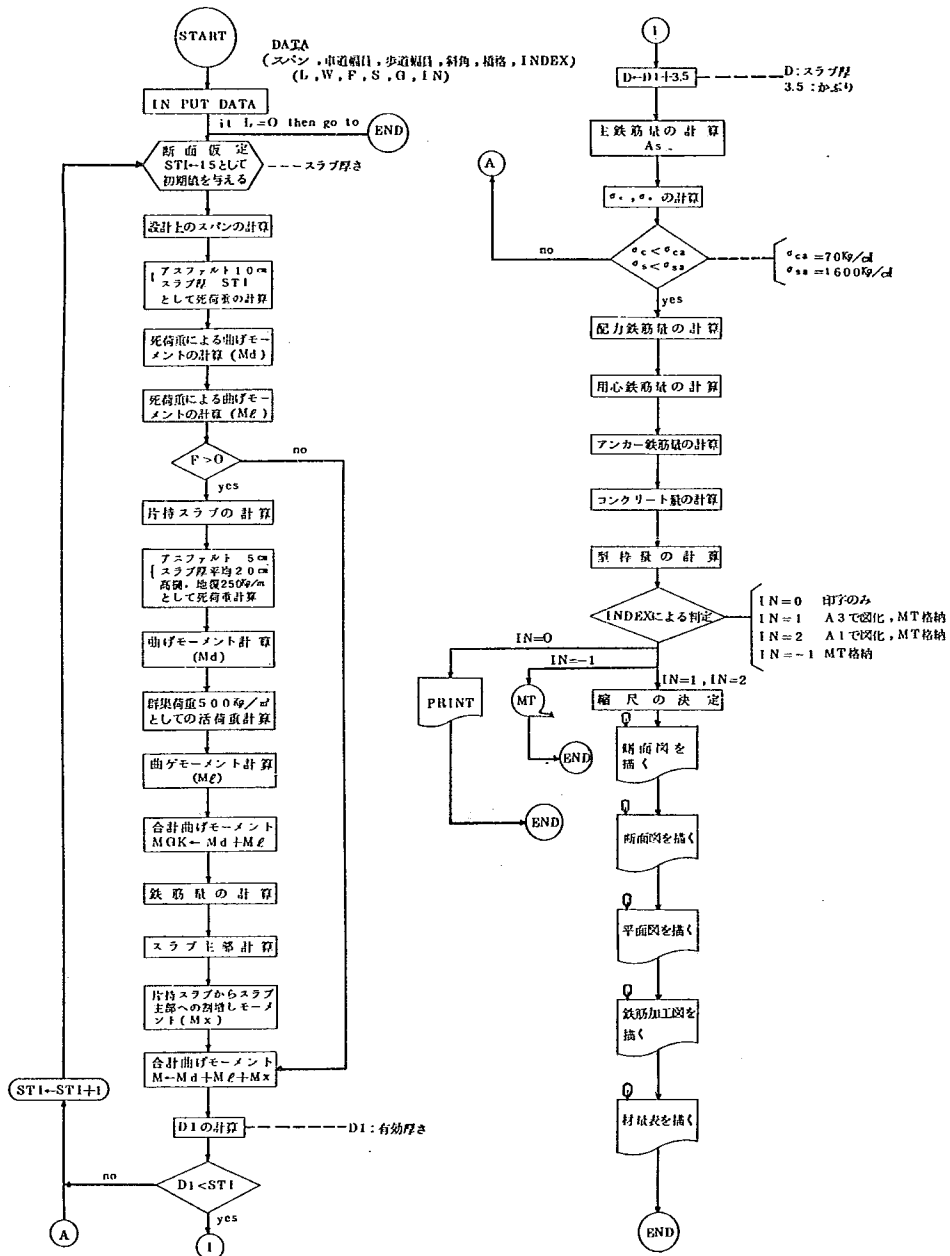


図-3 図化機によつて描いた R O 単純スラブ橋の側面図

5.3 フロチャート



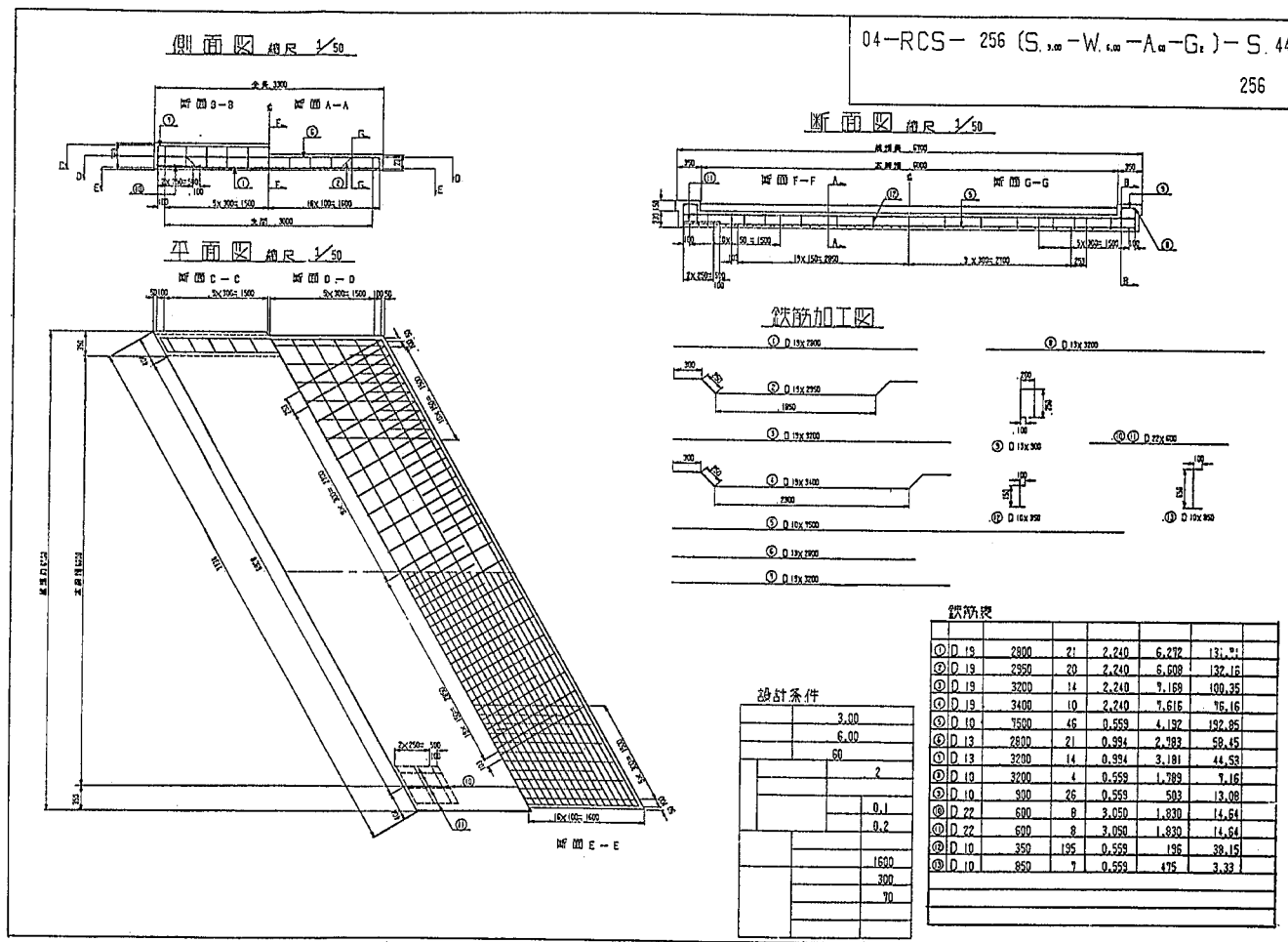


图 - 4

5.4 アウトプットの型式

鉄筋コンクリートスラブ橋 橋 格 等 橋									
支 間 -	m	設計上の支間 -	m	橋 長 -	m				
本線幅員 -	m	歩道幅員 -	m	総 幅 員 -	m	斜 角 -	度	L/W =	
死 荷 重 -	Kg	死荷重モーメント -	Kg . cm	活荷重モーメント -	Kg . cm				
歩道モーメント									
線部モーメント -	Kg . cm	中央部モーメント -	Kg . cm	線部モーメント -	Kg . cm	中央部モーメント -	Kg . cm		
合 計 モーメント -	Kg . cm								

所要鉄筋量 -	cm/m	使用鉄筋量 -	cm/m	有効高 -	cm	決定高 (d+3.5) -	cm		
1 m 当り主鉄筋本数				pitch	cm				
主鉄筋合計	支 承	直 角	本	本	X	-	cm	合計 -	cm
諸数値									
	支 間	平 行	本	本	X	-	cm	合計 -	cm
諸数値									

組立用鉄筋合計	支 承	直 角	本	本	X	-	cm	合計 -	cm
	支 間	平 行	本	本	X	-	cm	合計 -	cm

配 力 鉄 筋 LOW 所要鉄筋量 -	cm/m	使用鉄筋量 -	cm/m						
1 m 当り配力鉄筋 LOW 本数		pitch	cm	UPPER 本数	pitch	cm			
配 力 鉄 筋 LOW 合 計 本 数 -	本	X	-	cm	cm	cm			
配 力 鉄 筋 UPPER 合 計 本 数 -	本	X	-	cm	cm	cm			

用 心 鉄 筋 所要鉄筋量 -	cm/m	使用鉄筋量 -	cm/m	支間/5 -	m				
1 m 当り用心鉄筋本数				pitch	cm				
用 心 鉄 筋 合 計 YV -	本	YH -	本	合 計 -	本	X	-	cm	cm

歩 道 部 主 鉄 筋 所要鉄筋量 -	cm/m	使用鉄筋量 -	cm/m						
1 m 当り主鉄筋本数		pitch	cm						
合 計 本 数 -	本	X	-	cm	cm	cm			
配 力 鉄 筋 LOW	X	-	cm	cm	cm	cm			
配 力 鉄 筋 UPPER	X	-	cm	cm	cm	cm			

鉄筋許容せん断応力度 (5割増し) -	Kg/cm ²	橋幅 1 m 当りの橋軸方向の地震力 ... ph -	Kg	アンカーボルト 所有断面積 -	cm ² /m	鉄 筋 径 -	cm		

*****REINFORCED-----CONCRETE-----SLAB-----BRIDGE-----1--TOKYO*****

****SPAN= 6.00 m DESIGN SPAN= 5.80 m KYOTYO= 6.50 *****
W= 6.00 m F= 1.50 m TOTAL WIDTH= 9.60 m SKEW= 75 X= 0.909
DEADLOAD= 1255.00 kg DEADMOMENT= 526918.92 kg.cm LIVEMOMENT= 1093199.89 kg.cm
HODO MOMENT
FMX= 366945.22 kg.cm FMC= 215226.98 kg.cm FMY= 120155.90 kg.cm FMC= -120155.90 kg.cm
TOTAL MOMENT= 1987064.04 kg.cm

SYUTEKKEIN--AS= 35.22 cm2/m A(I)= 38.80 cm2/m YUKO DAKA= 41 cm KETTEI DAKA(d+3.5)= 45 cm

1m atari SYUTEKKIN honsu-----D 22 - 10.0 pitch 10.0 cm

SYU TEKKIN TOTAL SISYO TYOKKAKU No1= 35 hon No2= 33 hon 33 x 100 = 3300 mm 65 mm SL= 3365 mm
SSS1= 600 mm SSS2= 200 mm SSS3= 380 mm SSS4= 1180 mm SSS5= 6182 mm
SSS6= 1911 mm SSS7= 800 mm MAGEAGE 537 mm SSS8= 6497 mm
SPAN HEIKO No3= 20 hon No4= 16 hon 16 x 100 = 1600 mm 56 mm SL1= 1656 mm
SKEW WIDTH= 6833 mm S22= 1656 mm S11/2= 3416 mm ZIFUKU= 2242 mm SKEW SYADO= 8386 mm
SSS9= 3200 mm SSS10= 2400 mm SSS11= 2020 mm SSS12= 6715 mm

KUMITATE TEKKIN TOTAL SISYO TYOKKAKU 35 hon 16 x 200 = 3200 mm 165 mm SL= 3365 mm
SPAN HEIKO 20 hon 8 x 200 = 1600 mm 56 mm SL1= 1656 mm

HAIRYOKU TEKKIN LOW--AS= 13.19 cm2/m A(I)= 13.20 cm2/m
1m atari HAIRYOKU TEKKIN LOW honsu---D 16 - 6.7 pitch 15.0 cm UPPER honsu--D 16 pitch 45.0 cm

HAIRYOKU TEKKIN LOW TOTAL honsu= 45 hon 21 x 150 = 3150 mm 50 mm 3200 mm
HAIRYOKU TEKKIN UPPER TOTAL honsu= 17 hon 7 x 450 = 3150 mm 50 mm 3200 mm

YOZIN TEKKIN-----AS= 23.28 cm2/m A(I)= 25.35 cm2/m SPAN/5= 1.20 m

1m atari YOZIN TEKKIN honsu-----D 25 - 5.0 pitch 20.0 cm

YOZIN TEKKIN TOTAL YV= 7 hon YH= 7 hon TOTAL= 14 hon 6 x 200 = 1200 mm 0 mm 1200 mm

HARIDASHIRU SYUTEKKIN--AS= 4.44 cm2/m A(I)= 4.75 cm2/m

1m atari SYUTEKKIN honsu-----D 10 - 6.7 pitch 15.0 cm

TOTAL honsu= 43 hon 21 x 150.0 = 3150 mm 50 mm 3200 mm

HAIRYOKU TEKKIN 21 x 150.0 = 3150 mm 50 mm 3200 mm

HAIRYOKU TEKKIN 7 x 200 = 1400 mm 150 mm 1550 mm

TEKKIN SHEARING STRESS= 900.00 kg/cm2 EARTHQUAKE FORCE----Ph= 1631.50 ANKA TEKKIN-----AS= 1.81 cm2/m
D16mm

S T R E S S					
ALLOWABLE STRESS OF CONCRETE	70.00 kg/cm2	ALLOWABLE STRESS OF REINFORCED	1600.00 kg/cm2		
TRUE CONCRETE STRESS-----	67.89 kg/cm2	TRUE REINFORCED STRESS-----	1460.43 kg/cm2		

F E R R O R I S T

NO	NAGASA(mm)	HONSU(hon)	UNITWEIGHT(kg/m)	1honWEIGHT(kg)	WEIGHT(kg)	USE
1	6182	35	3.050	18.855	659.92	SHISYO TYOKKAKU SYUTEKKIN
2	6497	33	3.050	19.815	653.88	SHISYO TYOKKAKU SYUTEKKIN MAGEAGE
3	6400	20	3.050	19.520	390.40	SPAN HEIKO SYUTEKKIN
4	6715	16	3.050	20.480	327.67	SPAN HEIKO SYUTEKKIN MAGEAGE
5	6626	62	1.550	10.270	636.74	HAIRYOKU TEKKIN
6	6182	35	0.994	6.145	215.07	KUMITATE TEKKIN SHISYO TYOKAKU
7	6400	20	0.994	6.362	127.23	KUMITATE TEKKIN SPAN HEIKO
8	6400	4	1.550	9.020	39.68	ZIFUKU TEKKIN
9	627	34	1.550	0.972	33.05	ZIFUKU TEKKIN
10	1200	14	3.980	4.776	66.86	YOZIN TEKKIN
11	1200	14	3.980	4.776	66.86	YOZIN TEKKIN
12	2375	43	0.559	1.328	57.09	HARIDASHIBU SYUTEKKIN
13	2312	43	0.559	1.292	55.57	HARIDASHIBU HAIRYOKU TEKKIN
14	6400	40	0.559	3.578	143.10	HARIDASHIBU HAIRYOKU TEKKIN
15	1160	425	0.559	0.648	275.59	KUMITATE TEKKIN
16	1025	7	1.550	1.589	11.12	ANKA-TEKKIN
TOTAL					3759.84	

CONCRETE VOLUME

NO= 1	19.305
NO= 2	0.682
NO= 3	0.975
NO= 4	3.900
TOTAL=	24.862 m3

KATAWAKU AREA

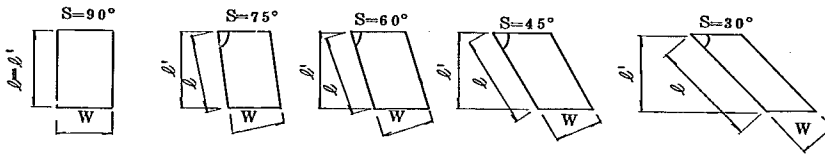
NO= 1	42.9000
NO= 2	6.1495
NO= 3	3.1058
NO= 4	5.8500
NO= 5	1.9500
NO= 6	4.7105
NO= 7	1.9500
NO= 8	0.6729
NO= 9	1.9500
NO= 10	19.5000
TOTAL=	88.7388 m2

HONSEN HOSO VOLUME= 4.038 m3

HODO HOSO VOLUME= 1.009 m3

§ 6 設 計 計 算 式

6.1 設計上のスパン



W : 全幅員

L : 設計上のスパン

$$l' = l \times \sin S$$

$$X = \frac{l}{W}$$

- | | | | | |
|-----|-----------|-------------|-------------|--------------------------------|
| (a) | $X > 1.3$ | $S \leq 90$ | $S \geq 30$ | $L = l$ |
| (b) | $X > 0.7$ | $X < 1.3$ | $S \geq 75$ | $L = l'$ |
| (c) | $X > 0.7$ | $X < 1.3$ | $S < 75$ | $S \geq 30$ $L = (l' + l) / 2$ |
| (d) | $X < 0.7$ | $S \leq 90$ | $S \geq 30$ | $L = l'$ |

6.2 曲げモーメントの計算

1) 歩道のない場合 (RC道示による)

(a) 死荷重モーメント

ス ラ プ : $SL = 2.5 * (\text{假定厚さ})$

舗装アスファルト : $ASF = 2.3 * 0.10$

高欄及び地覆 : $KR = 100 / W$

計 $V = SL + ASF + KR$

$$Md = \frac{V \times L^2}{8} \quad (\text{t} \cdot \text{m})$$

(b) 荷重曲げモーメント

$$1 \text{ 等橋 } Ml = 1.8 \times L + 0.5 \quad (\text{t} \cdot \text{m})$$

$$2 \text{ 等橋 } Ml = (1.8 \times L + 0.5) \times 0.7 \quad (\text{t} \cdot \text{m})$$

(c) 合計曲げモーメント

$$M = Md + Ml \quad (\text{t} \cdot \text{m})$$

2) 歩道のある場合

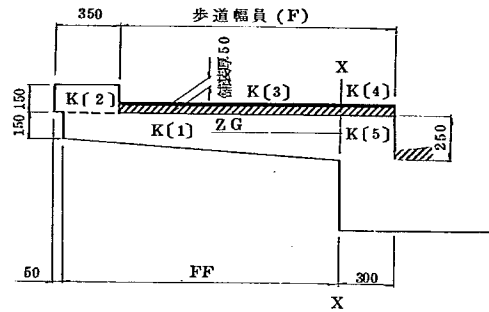


图 6

(a) 死 荷 重

X - X から図心を求める

$$Z_G = \frac{FF}{3} \times \frac{0.25 - 2 \times 0.15}{0.25 + 0.15}$$

荷 重

モ - メ ン ト

$$K(1) = \frac{0.15 + 0.25}{2} \times FF \times 2.5$$

$$K(6) = K(1) \times ZG$$

$$K(2) = 0.200 \text{ (高欄を含む)}$$

$$K(7) = K(2) \times (FF - 0.30/2)$$

$$K(3) = 0.05 \times (F - 0.30) \times 2.3$$

$$K(8) = K(3) \times (F - 0.30/2)$$

$$K(4) = 0.05 \times 0.30 \times 2.3$$

$$K(5) = 0.25 \times 0.30 \times 2.5$$

計 $K(9)=K(1)+K(2)+K(3)+K(4)+K(5)$ $K(10)=K(6)+K(7)+K(8)$

(b) 活 荷 重

群集荷重

モーメント

$$K K \{1\} = 0.5 \times (F - 0.3 \ 0)$$

$$KK(4) = KK(1) \times (\mathbb{F} - 0.30) / 2$$

$$KK(2) = 0.5 \times 0.30$$

計 $KK(3) = KK(1) + KK(2)$

(c) 合計

$$G_K = K(9) + KK(3)$$

$$MGK = K(10) + KK(4)$$

(d) 片持スラブの設計

i) 高欄から X-X の曲げモーメント

$$M_H = 0.25 \times 1.10$$

ii) 曲げモーメント合計

$$M = MGK + MH$$

iii) 主鉄筋量の計算

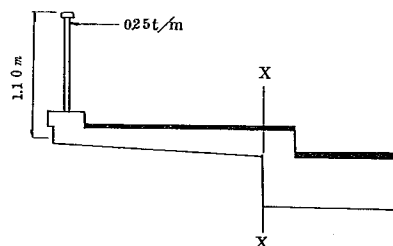


图 - 7

$$A_s = \frac{M}{\sigma_s a \times 7/8 \times d} \dots \dots \dots \text{所要鉄筋量}$$

$$A(\bar{I}) \dots \dots \dots \text{使用鉄筋量}$$

d : 片持スラブの有効高さ 22 cm とする。

(e) 片持スラブからのスラブ主部への割増しモーメント

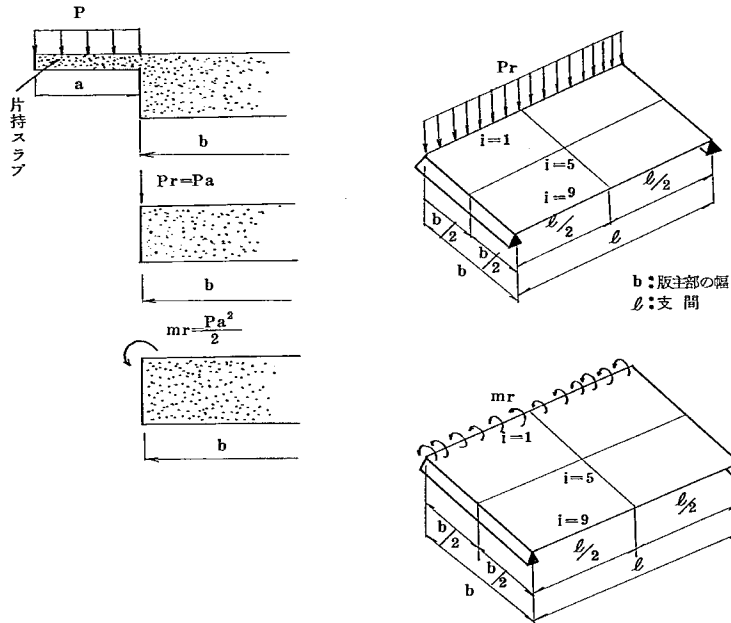


図 - 8

片持スラブ部からの荷重の影響をスラブ主部の縁部に載荷する荷重 Pr , 曲げモーメント mr , に分けて考える。

これらの荷重 Pr および mr が上図のようにスラブ縁にそって一様に分布されているものと仮定する。この Pr とはスラブ主部の縁部における橋軸方向の単位幅当りの張り出し部の重量すなわち片持スラブの自重によるせん断力と橋軸方向の単位幅当りの活荷重などによるせん断力の合計したものである。

mr とは同様にスラブ主部の縁部における橋軸方向単位幅当りの張り出し部の自由および活荷重の曲げモーメントである。

$$MX_i = Pr \ell \beta_i + mr \gamma_i \quad \quad \quad MX_i : i \text{ 点における橋軸方向の単位幅当りの曲げモーメント}$$

$$MY_i = Pr \ell \beta'_i + mr \gamma'_i \quad \quad \quad MY_i : i \text{ 点における橋軸直角方向の単位幅当りの曲げモーメント}$$

$\beta_i \beta'_i \gamma_i \gamma'_i$ は H. O. L. sen の表より与える。

L/W			0<0.25	0.25	0.30	0.35	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00
(I)			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
縁 荷 重	$\frac{MX}{PrL}$	B 1	0.2475	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.249	0.250	0.253	0.263	0.277	0.296	0.316	0.364	0.419	0.475	0.532
		B 5	0	0.002	0.005	0.010	0.016	0.030	0.047	0.063	0.079	0.096	0.110	0.147	0.181	0.214	0.247	0.310	0.374	0.438	0.500
		B 9	0	0.001	0.002	0.002	0.002	0.003	0.008	0.017	0.025	0.036	0.048	0.083	0.119	0.157	0.193	0.264	0.333	0.401	0.469
	$\frac{MY}{PrL}$	BB1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		BB5	0	-0.002	-0.004	-0.007	-0.011	-0.019	-0.027	-0.033	-0.038	-0.042	-0.046	-0.050	-0.051	-0.050	-0.049	-0.044	-0.038	-0.035	-0.031
		BB9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
縁 モ ー メ ン ト	$\frac{MX}{mr}$	G 1	0.333	0.333	0.333	0.333	0.333	0.333	0.332	0.332	0.331	0.329	0.326	0.317	0.305	0.296	0.287	0.274	0.264	0.259	0.255
		G 5	0	-0.004	-0.007	-0.013	-0.020	-0.040	-0.050	-0.058	-0.062	-0.062	-0.062	-0.054	-0.044	-0.035	-0.026	-0.015	-0.008	-0.004	-0.002
		G 9	0	-0.001	-0.002	-0.002	-0.003	-0.007	-0.013	-0.027	-0.045	-0.062	-0.078	-0.117	-0.149	-0.175	-0.197	-0.220	-0.233	-0.240	-0.245
	$\frac{MY}{mr}$	GG1	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
		GG5	0	0.003	0.003	0.003	0.003	0.003	-0.005	-0.030	-0.061	-0.091	-0.122	-0.198	-0.267	-0.324	-0.365	-0.420	-0.454	-0.474	-0.486
		GG9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ポアソン比 $\mu = 0$

MX - スラブの橋軸方向単位幅当り曲げモーメント

MY - スラブの橋軸直角方向単位幅当り曲げモーメント

Pr - 単位長さ当り縁荷重 (t/m)

mr - 片持版によつて与えられる単位長さ当りの縁モーメント (t・m/m)

L - スラブの支間 W - スラブ主部の幅

i) スラブ縁部モーメント

$$M_{X1} = G K \times L \times B1(I) + M G K \times G1(I)$$

ii) スラブ中央部モーメント

$$M_{X5} = (G K \times L \times B5(I) + M G K \times G5(I)) \times 2$$

iii) M_{X1} と反対側のスラブ縁部モーメント

$$M_{X9} = G K \times L \times B9(I) + M G K \times G9(I)$$

iv) 縁部合計モーメント

$$M_{X19} = M_{X1} + M_{X9}$$

(f) 合計曲げモーメント

$$M = M_d + M_\ell + M_{X19}$$

$$M M = M_d + M_\ell + M_{X5}$$

$\therefore M$ と $M M$ を比較して大きい方の値をとる。

3) 直交等方性平行四辺形に対する階差方程式による曲げモーメントの計算

(a) 板理論の概要

i) たわみ曲面の微分方程式

$$B x \frac{\partial^4 W}{\partial x^4} + 2 H \frac{\partial^4 y}{\partial x^2 \partial y^2} + B y \frac{\partial^4 W}{\partial y^4} = P \dots\dots\dots(1)$$

$$2 H = 4 c + \nu x B y + \nu y B x, \quad 2 c = (1 - \sqrt{\nu x \nu y}) \sqrt{B x B y}$$

ii) 曲げモーメントおよびねじりモーメント

$$\left. \begin{aligned} M_x &= -B x \left(\frac{\partial^2 W}{\partial x^2} + \nu y \frac{\partial^2 W}{\partial y^2} \right), \quad M_y = -B y \left(\frac{\partial^2 W}{\partial y^2} + \nu x \frac{\partial^2 W}{\partial x^2} \right) \\ M_{xy} &= -2 c \frac{\partial^2 W}{\partial x \partial y} = -\sqrt{B x B y} (1 - \sqrt{\nu x \nu y}) \frac{\partial^2 W}{\partial x \partial y} \end{aligned} \right\} \dots\dots\dots(2)$$

iii) 反力

$$\left. \begin{aligned} U_x &= -B x \left\{ \frac{\partial^3 W}{\partial x^3} + \left(\frac{4 c}{B x} + \nu y \right) \frac{\partial^3 W}{\partial x \partial y^2} \right\} \\ U_y &= -B y \left\{ \frac{\partial^3 W}{\partial y^3} + \left(\frac{4 c}{B y} + \nu x \right) \frac{\partial^3 W}{\partial x^2 \partial y} \right\} \end{aligned} \right\} \dots\dots\dots(3)$$

(b) 計算方法

i) の式を用いてたわみ曲面の微分方程式を階差方程式で誘導して各係数を出し多元連立一次方程式で各点のたわみを求めた。

例

支間: ℓ 幅員: W 斜角: S 弾性係数: E

Poisson ratio : ν

$$\text{板剛度} \quad D = \frac{E h^3}{12 (1 - \nu^2)}$$

分割を n 等分, h を適当な厚さに仮定する。

$$\lambda x = \frac{\ell}{n} \quad \lambda u = \lambda x$$

$$\lambda y = \frac{W}{n} \quad \lambda u = \lambda y / \sin(S)$$

$$D x = \left(\frac{E h^3}{12 (1 - \nu^2)} \right) / \lambda u$$

$$D y = \left(\frac{E h^3}{12 (1 - \nu^2)} \right) / \lambda v$$

$$K = \lambda y / \lambda x$$

$$\alpha = \sqrt{D y / D x}$$

$$A = K^2 (1 + \alpha \tan^2 S)$$

$$B = \alpha K \tan S$$

荷重強度 P_0

P_0 : 集中荷重

$$P_0 = p_0 + (q_0 / \lambda y) + (p_0 / \lambda x \lambda y)$$

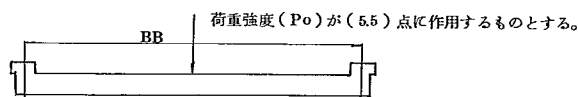
q_0 : 線荷重

p_0 : 等分布荷重

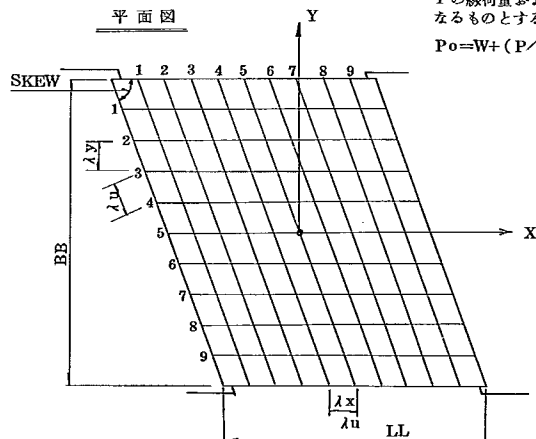
※各係数を用いて階差方程式を多元連立一次方程式として解きたわみを求める。たわみを(2)式に代入して各点の曲げモーメント、ねじりモーメントを求める。

直交等方性板の階差式による曲げモーメントを求める手続は次のようである。

断面図 (幅員方向)



平面図



*等分布荷重 W ・ X 方向の単位長さあたり
 P の線荷重および集中荷重 $LOAD$ より
なるものとする。

$$P_0 = W + (P / \lambda y) + (LOAD / \lambda x \lambda y)$$

図 - 9

<手続名およびパラメタ>

procedure KAISAI (P $\bar{O}$, E, H, LL, BB, SKEW, XN, YN, LOAD, P, W, M)

P $\bar{O}$: ポアソン比

E : 弾性係数比

H : 仮定したスラブ厚 (cm)

LL : スパン, X方向 (m)

BB : 幅員, Y方向 (m)

SKEW : 斜 角 (度)

XN : X方向分割数

YN : Y方向分割数

L $\bar{O}$ A D : 集中荷重 (中央に作用) (Kg)

P : 線 荷 重 (中央に作用) (Kg)

W : 等分荷重 (Kg/m')

M : 各点曲げモーメント (二次元 array) (t.m)

```

procedure KAISA1(PO,E,H,LL,BB,SKEW,XN,YN,LOAD,P,W,M);
  real PO,E,H,LL,BB,SKEW,XN,YN,LOAD,P,W;
  array M;
begin
  real BX,BY,KK,RY,RX,RU,RV,P2,A,B,ALF,MX,MY,
    A1,BBX,Q1,P1,PP,PP1,MM,DETERM;
  integer I,I1,J,J1,IX1,J1,J2,I1,I2,K,MN,N,ID;
  array AR,BR[1:50,0:50],KON,X[1:100],
    XX,YY[1:81,1:81],AR1[1:171];
  procedure MATINV(A,N,B,M,DETERM,ID);
    real DETERM; integer N,M,ID; array A,B;
  begin
    integer I,J,K,L,IROW,JROW,ICOLUM,JCOLUM;
    array INDEX[1:N,1:31];
    real PIVOT,AMAX;
    DETERM:=1;
    for I:=1 step 1 until N do
      INDEX[I,31]:=0;
      for I1:=1 step 1 until N do
        begin
          AMAX:=0;
          for J:=1 step 1 until N do
            if INDEX[J,31]≠1 then
              for K:=1 step 1 until N do
                begin
                  if INDEX[K,31]>1 then
                    begin
                      ID:=2; go to END;
                    end;
                  if AMAX<ABS(A[I,J,K])∧INDEX[K,31]<1 then
                    begin
                      IROW:=J; ICOLUM:=K; AMAX:=ABS(A[I,J,K]);
                    end;
                end;
              INDEX[ICOLUM,31]:=INDEX[IICOLUM,31]+1;
              INDEX[I1,1]:=IROW; INDEX[I1,2]:=ICOLUM;
              if IROW=ICOLUM then go to L1;
              DETERM:=-DETERM;
              for L:=1 step 1 until N do
                begin
                  real SWAP;
                  SWAP:=A[IROW,L]; A[IROW,L]:=A[ICOLUM,L];
                  A[ICOLUM,L]:=SWAP;
                end;
              for L:=1 step 1 until M do
                begin
                  real SWAP;
                  SWAP:=B[IROW,L]; B[IROW,L]:=B[ICOLUM,L];
                  B[ICOLUM,L]:=SWAP;
                end;
              L1:
              PIVOT:=A[ICOLUM,ICOLUM];
              DETERM:=DETERM*PIVOT;
              A[ICOLUM,ICOLUM]:=1;

```

```

    for J:=1 step 1 until N do
      A[ICOLUMN,J]:=A[ICOLUMN,J]/PIVOT;
    for L:=1 step 1 until M do
      B[ICOLUMN,L]:=B[ICOLUMN,L]/PIVOT;
    for J:=1 step 1 until N do
      if J≠ICOLUMN then
        begin
          real T;
          T:=A[J,ICOLUMN];
          A[J,ICOLUMN]:=0;
          for L:=1 step 1 until N do
            A[J,L]:=A[J,L]-A[ICOLUMN,L]*T;
          for L:=1 step 1 until M do
            B[J,L]:=B[J,L]-B[ICOLUMN,L]*T;
          end;
        end;
    end;
  for I:=1 step 1 until N do
    begin
      J:=N+1-I;
      if INDEX[J,1]≠INDEX[J,2] then
        begin
          JROW:=INDEX[J,1];
          JCOLUMN:=INDEX[J,2];
          for K:=1 step 1 until N do
            begin
              real SWAP;
              SWAP:=A[K,JROW];
              A[K,JROW]:=A[K,JCOLUMN];
              A[K,JCOLUMN]:=SWAP;
            end;
          end;
          for K:=1 step 1 until N do
            if INDEX[K,3]≠1 then
              begin
                ID:=2; go to END;
              end;
            ID:=1;
          END:
        end;
    end;
  real procedure SIND(S);
    value S; real S;
    begin
      real PAI;
      PAI:=3.14159265358; SIND:=SIN(S*PAI/180);
    end;
  real procedure COSND(S);
    value S; real S;
    begin
      real PAI;
      PAI:=3.14159265358; COSND:=COS(S*PAI/180);
    end;
  real procedure TAND(S);
    value S; real S;
    begin
      real PAI;
      PAI:=3.14159265358;
      TAND:=SIN(PAI*S/180)/COS(PAI*S/180);
    end;

```

```

RY:=BB/YN; RV:=RY/SIND(SKEW);
RX:=LL/XN; RU:=RX;
BX:=(E*H3)/12*(1-PO2)/XN*RX;
BY:=(E*H3)/12*(1-PO2)/YN*RV;
ALF:=SQRT(BY/BX);
KK:=RY/RX;
A:=KK2*(1+ALF*(TAND(90-SKEW)2));
B:=ALF*KK*TAND(90-SKEW);
A1:=1-(BB/100-5.5)/50;
Q1:=P*A1; P1:=W*A1;
PP:=P1+(Q1/RV)+(LOAD/(RX*RV));
PP1:=P1+(Q1/RV)+(KK*LOAD/RV2);
BBX:=(PP*RV4)/BX;
MM:=1.8*((LL/100)*SIND(SKEW))+0.5;
X[13]:=6*ALF2+8*ALF*A+6*A2+B2;
X[14]:=-4*(ALF*A+A2);
X[15]:=A2-B2/2; X[12]:=X[14];
X[11]:=X[15]; X[8]:=-4*(ALF2+ALF*A);
X[9]:=2*(ALF*A-ALF*B-A*B);
X[10]:=A*B; X[7]:=2*(ALF*A+ALF*B+A*B);
X[6]:=-A*B; X[3]:=ALF2-B2/2;
X[4]:=ALF*B; X[5]:=B2/4;
X[2]:=-ALF*B; X[1]:=X[5];
X[18]:=X[8]; X[19]:=X[7];
X[20]:=-A*B; X[17]:=X[9];
X[16]:=X[10]; X[23]:=X[3];
X[24]:=X[2]; X[25]:=X[1];
X[22]:=X[4]; X[21]:=X[5];
IX1:=1;
AR1:=vec 0,0,0,0,0,0,1,6,11,16,21,0 tor;
for I1:=1 step 1 until 9 do
begin
integer IX2; IX2:=1;
for I2:=1 step 1 until 9 do
begin
integer K1;
K1:=82-((I1-1)*9+I2);
for J1:=1 step 1 until 9 do
begin
array AR2[1:81];
real C1,C2,C3,C4,C5,D;
D:=AR1[IX1+J1-1];
if D $\neq$ 0 then
begin
C1:=X[D]; C2:=X[D+1]; C3:=X[D+2];
C4:=X[D+3]; C5:=X[D+4];
end else
C1:=C2:=C3:=C4:=C5:=0;

```

```

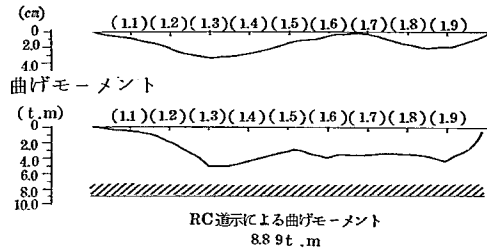
      AR2:=vec 0,0,0,0,0,0,C1,C2,C3,C4,C5,0 tor;
      for J2:=1 step 1 until 9 do
        begin integer K2;
          K2:=(J1-1)*9+J2;
          XX[K1,K2]:=AR2[IX2+J2-1];
        end;
      end;
      IX2:=IX2+1;
    end;
    IX1:=IX1+1;
  end;
  N:=XN*YN; MN:=1;
  for I:=1 step 1 until N do
    for J:=1 step 1 until MN do YY[I,J]:=BBX;
      MATINV(XX,N,YY,MN,DETERM,ID);
      if ID=2 then go to CHECK;
    for I:=-10 step 1 until 1 do XX[I]:=0;
    for I:=N step 1 until N+10 do XX[I]:=0;
    for I:=1 step 1 until N do XX[I]:=YY[I,1];
    for I:=1 step 1 until N do
      begin
        MX:=-BX*((XX[I if I-I+9*9=1 v I=1 then 0 else
          I-1]-2*XX[I+1]+XX[I if I-I+9*9=0 then 0 else
          I+1])/(RU↑2)+PD*(XX[I-9]-
            2*XX[I+1]+XX[I+9])/(RV↑2));
        MX1:=MX/(RU/100)/100000;
        MX2:=ABS(MX1);
        if I≤9 then begin II:=1; JJ:=I; end;
        if I>9*II then II:=II+1;
        if I>9 then JJ:=I-II*9;
        M[II,JJ]:=MX2;
      end;
    CHECK:
      CRLF(2); SPACE(20);
      PRINTS('THE MATRIX IS SINGULAR'); CRLF(2);
  end;
end;

```

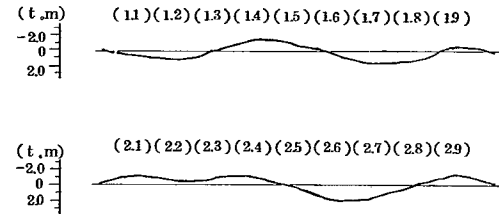
計 算 例

支間 5.0 m 幅員 6.0 m 斜角 60°歩道のない時

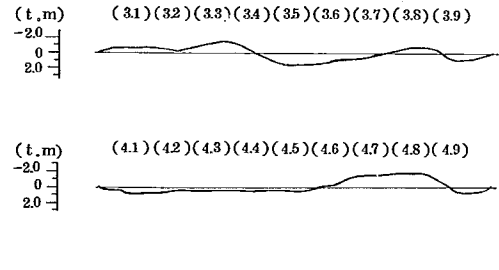
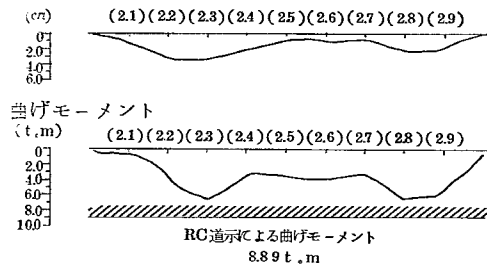
X方向のたわみ



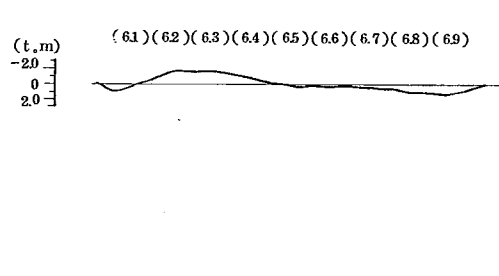
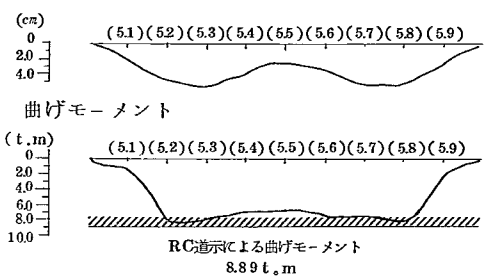
ねじれモーメント



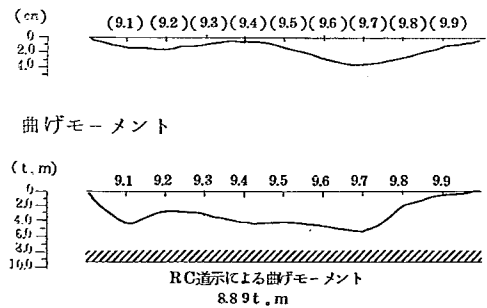
X方向のたわみ



X方向のたわみ



X方向のたわみ



6.3 断面算定

$$\left. \begin{aligned} m &= \frac{\sigma_s a}{\sigma_c a} & n &= \frac{E_s}{E_c} = 15 \\ S &= \frac{n + \sigma_c a}{n \sigma_c a + \sigma_s a} = \frac{n}{n + m} \\ C_s &= \sqrt{\frac{2m}{S(1 - \frac{S}{3})}} \\ d' &= C_s \sqrt{\frac{M}{\sigma_s a}} \end{aligned} \right\} \text{吉田徳次郎 鉄筋コンクリート設計方法より}$$

※ d' が始めに仮定した厚さより大きい場合は 1 cm プラスして d' が小さくなるまで計算をくりかえして最適断面を求める。

最終スラブ厚さ

$$d = d' + 3.5 \text{ (cm)} \quad 3.5 : \text{かぶり}$$

6.4 主要鉄筋量の計算

$$\begin{aligned} A_s &= \frac{M}{\sigma_s a (1 - \frac{S}{3}) d} \quad \text{..... 所有鉄筋量} \\ &\downarrow \\ A(I) &\quad \text{..... 使用鉄筋量} \end{aligned}$$

6.5 応力計算

$$p = \frac{A(I)}{100 \times d} \quad n : 15$$

$$K = \sqrt{2 \times n \times p + (n + p)^2} - n \times p$$

$$j = 1 - \frac{k}{3}$$

$$\sigma_c = \frac{2 \times M}{k \times j \times 100 \times d^2} < \sigma_{ca} \text{ の場合は } 0.8 \times K$$

$$\sigma_s = \frac{M}{A(I) \times j \times d} < \sigma_{sa} \text{ の場合は } 0.8 \times K$$

6.6 配力鉄筋量の計算

1) 歩道のない場合

$$x > 0.7 \quad s \leq 45 \quad s \geq 30 \quad HAS = 1.5 \times (A(I) \times 0.6 / \sqrt{L})$$

$$x > 0.7 \quad s \leq 90 \quad s > 45$$

$$\alpha = 0.60 / \sqrt{L} \quad \beta = 0.50 \times (90 - s) / 45$$

$$\alpha' = \beta \times \alpha \quad HAS = A(I) \times \alpha'$$

$$X < 0.7 \quad S \leq 90 \quad S \geq 30 \quad H A S = A(I) \times (0.60 / \sqrt{L})$$

$$H A S \longrightarrow A(I)' \quad \text{使用鉄筋量 (下側)}$$

$$H A S = \frac{1}{3} \times A(I)' = A(I)'' \quad \text{使用鉄筋量 (上側)}$$

2) 歩道のある場合 (図-8参照)

a) スラブ縁部モーメント

$$M Y 1 = G K \times L \times B B 1(I) + M G K \times G G 1(I)$$

b) スラブ中央部モーメント

$$M Y 5 = (G K \times L \times B B 5(I) + M G K \times G G 5(I)) \times 2$$

c) M Y 1 と反対側のスラブ縁部モーメント

$$M Y 9 = G K \times L \times B B 9(I) + M G K \times G G 9(I)$$

d) 縁部合計モーメント

$$M Y 19 = M Y 1 + M Y 9$$

e) 鉄筋量の割増し

M Y 5 と M Y 19 を比較して大きい方の曲げモーメントを使用して M に入れて鉄筋量

(H A S') を求めてスラブ本部 (H A S) に割増しを行う。

$$H A S' = \frac{M}{\sigma_{ca} \times \frac{7}{8} \times d} \quad d : \text{スラブ主部厚さ}$$

$$H A S = H A S + H A S' \longrightarrow A(I)' \quad \text{使用鉄筋量 (下側)}$$

$$H A S = \frac{1}{3} \times A(I)' \longrightarrow A(I)'' \quad \text{使用鉄筋量 (上側)}$$

6.7 用心鉄筋量の計算

$$S = 90^\circ \quad Y A S = 0$$

$$S < 90^\circ \quad S \geq 75^\circ \quad Y A S = A(I) \times 0.6 \quad S : \text{斜角}$$

$$S < 75^\circ \quad S \geq 60^\circ \quad Y A S = A(I) \times 0.8$$

$$S < 60^\circ \quad S \geq 45^\circ \quad Y A S = A(I) \times 1.0$$

$$S < 45^\circ \quad S \geq 30^\circ \quad Y A S = A(I) \times 1.2$$

6.8 アンカー鉄筋量の計算

$$\text{許容せん断応力度} \quad \sigma \tau a = 600 \text{ kg/cm}^2$$

地震時を考慮して5割増しとすると $\sigma \tau a = 900 \text{ kg/cm}^2$ となる。

$$P_H = K_H W L$$

K_H : 水平震度

$$A s = \frac{P_H}{\sigma \tau a}$$

W : 死荷重

L : 設計上のスパン

6.9 コンクリート量、型枠量

断面図

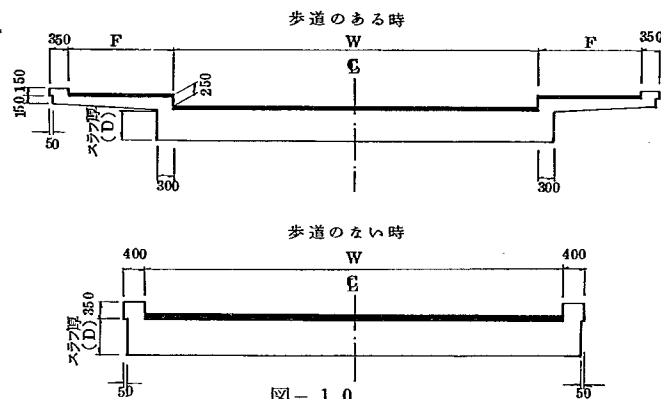


図-10

LL:橋長 S:斜角

コンクリート量

```

CON(1):=LL*D*(if F=0 then W+0.70 else W+0.60) .....スラブ主部
CON(2):=if F=0 then (LL*0.40*0.35)*2 else (LL*0.35*0.15)*2 ...地覆部
CON(3):=if F=0 then 0 else (LL*0.25*0.30)*2 .....縁石部
CON(4):=if F=0 then 0 else ((0.25+0.15)*F)/2)*LL*2 .....歩道部
GOKEI1:=CON(1)+CON(2)+CON(3)+CON(4) .....合計

```

型枠量

```

KAT(1):=if F=0 then (W+0.70)/sin(S)*(LL*sin(S))
           else (W+0.60)/sin(S)*(LL*sin(S)) .....スラブ主部
KAT(2):=if F=0 then (W+0.70)/sin(S)*D*2 else (W+0.60)/sin
           (S)*D*2 .....スラブ主部
KAT(3):=if F=0 then (W/sin(S))*0.35*2 else (W/sin(S))*
           0.25*2 .....地覆部
KAT(4):=LL*D*2 .....スラブ主部
KAT(5):=if F=0 then 0 else LL*0.15*2 .....歩道部
KAT(6):=if F=0 then 0.40/sin(S)*LL*2 else 0.35/sin(S)
           *LL*2 .....地覆部
KAT(7):=if F=0 then 0.35*LL*2 else 0.15*LL*2 .....地覆部
KAT(8):=(0.05/sin(S))*LL*2 .....地覆部
KAT(9):=if F=0 then 0 else 0.15*LL*2 .....歩道, 地覆部
KAT(10):=if F=0 then 0 else (F/sin(S))*LL*sin(S)*2 .....歩道部
GOKEI2:=KAT(1)+KAT(2)+KAT(3)+KAT(4)+KAT(5)+
           KAT(6)+KAT(7)+KAT(8)+KAT(9)+KAT(10) .....合計

```

§ 7. 設 計 細 目

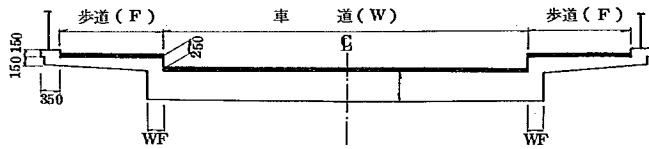
7. 1 歩道の取付部の幅について

歩道のあるスラブ橋の断面決定は、歩道を片持ばりと考えて曲げモーメントを計算し、その曲げモーメントにH. Olesenの表から影響係数を計算し、掛合せ、スラブ主部の曲げモーメントに加えて

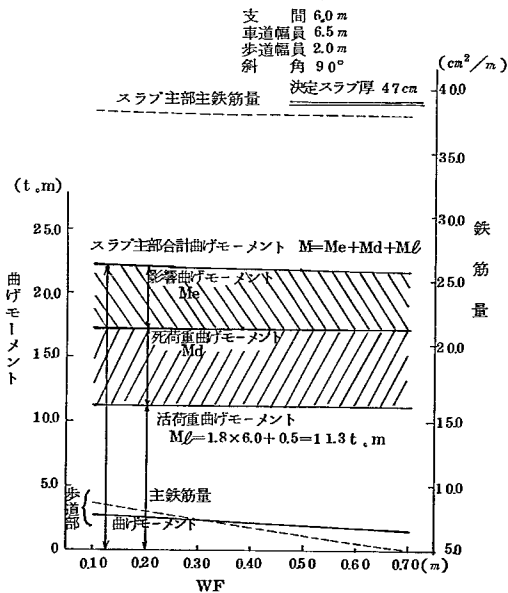
設計曲げモーメントを求め、鉄筋量および応力計算を行う。 図-11

したがって図-11のWFの幅を0.05 m 毎に変化させスラブ主部にどのように影響するか検討してみた。図-12はWFの変化に対する曲げモーメントと鉄筋量を示すが、このうち影響曲げモーメントは張り出し部の曲げモーメントに影響係数を掛けたものであり、合計曲げモーメントと鉄筋量は、WFの変化に対してさして影響はない。また図-13はこれらの結果に単価を考慮したものであるが、WFの小さい方が経済的である。したがって標準設計におけるWFの幅は、WFの部分の配筋や応力状態を考え30 cmと決定した。

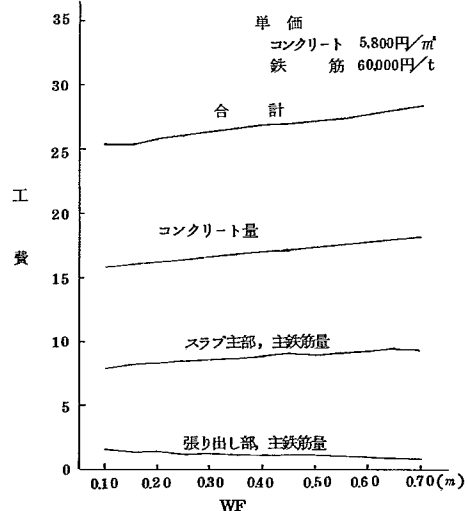
断面図



WFと曲げモーメント、主鉄筋量の関係



WFと工費の関係



7.2 床版配筋について

1) 主鉄筋と配力鉄筋の配筋について (R, C道示4・5条)

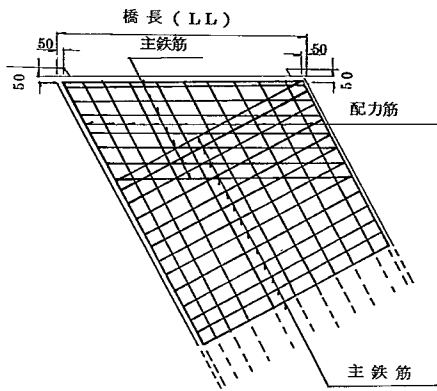


図-1 4

2) 用心鉄筋の配筋について (R, C道示4・5条)

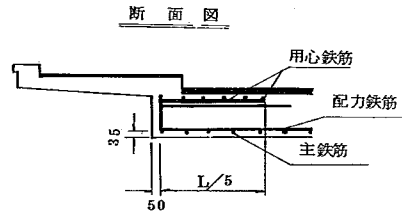


図-1 5

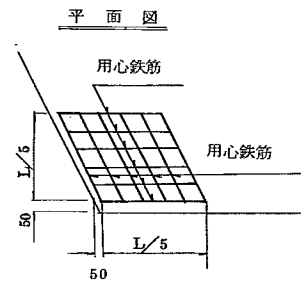


図-1 6

7.3 地覆鉄筋と歩道鉄筋について

1) 歩道のない場合

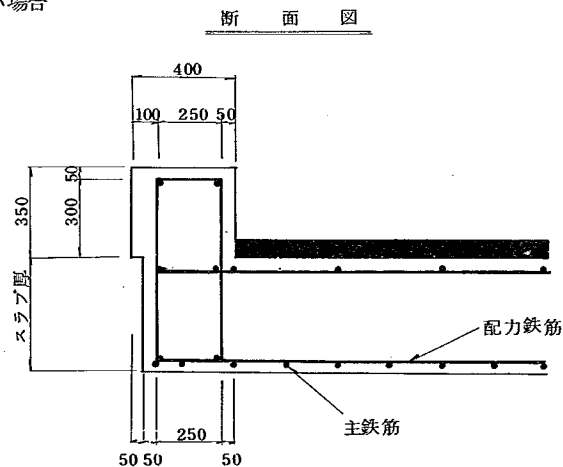


図-1 7

2) 歩道のある場合

断面図

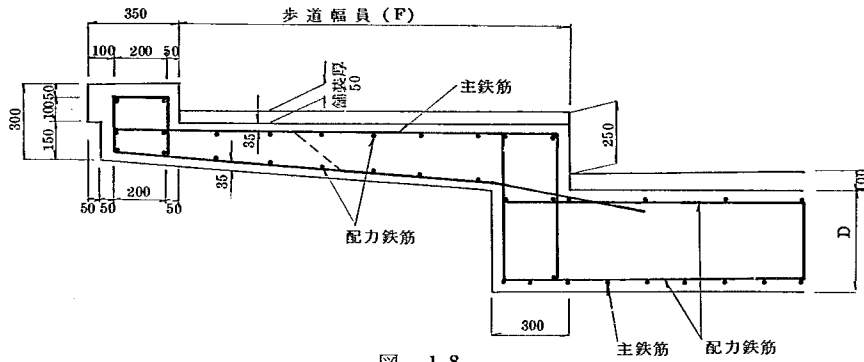


図-18

平面図

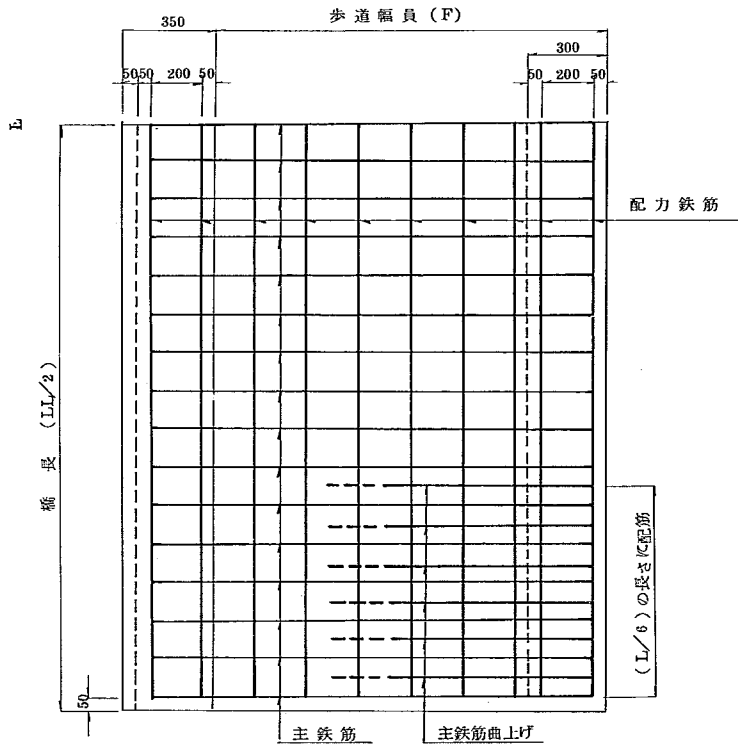


図-19

7.4 鉄筋表 (1m当り)

表 - 2

A (I)	鉄筋種類	本 数 (本)	ピ ッ チ (cm)	A s 鉄筋量 (cm ²)
1	D10	4	25	2.85
2	D10	5	20	3.57
3	D10	6.7	15	4.75
4	D13	4	25	5.08
5	D10	8	12.5	5.70
6	D13	5	20	6.35
7	D10	10	10	7.13
8	D16	4	25	7.92
9	D13	6.7	15	8.47
10	D16	5	20	9.90
11	D13	8	12.5	10.16
12	D19	4	25	11.40
13	D13	10	10	12.70
14	D16	6.7	15	13.20
15	D19	5	20	14.25
16	D22	4	25	15.52
17	D16	8	12.5	15.84
18	D19	6.7	15	19.00
19	D22	5	20	19.40
20	D16	10	10	19.80
21	D25	4	25	20.28
22	D19	8	12.5	22.80
23	D25	5	20	25.35
24	D29	4	25	25.64
25	D22	6.7	15	25.87
26	D19	10	10	28.50
27	D22	8	12.5	31.04
28	D29	5	20	32.05
29	D25	6.7	15	33.80
30	D22	10	10	38.80
31	D25	8	12.5	40.56
32	D29	6.7	15	42.73
33	D25	10	10	50.70

§ 8 計 算 結 果

1. 支間と曲げモーメントの関係 (図-20)
2. 支間とスラブ厚の関係 (図-21)
3. 支間と鉄筋量の関係 (図-22)
4. 支間と用心鉄筋量の関係 (図-23)
5. 支間とコンクリート量, 型枠量の関係 (図-24)

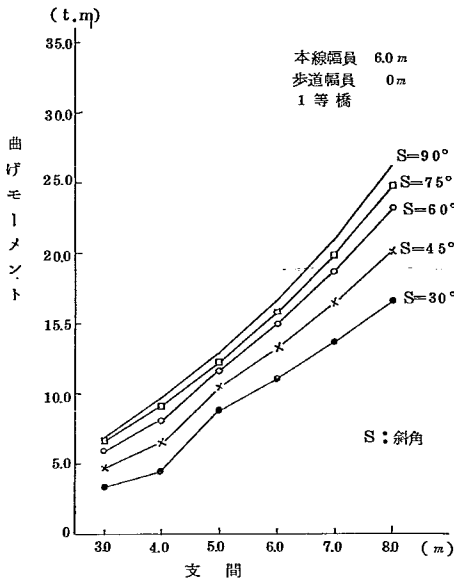


図-20.1

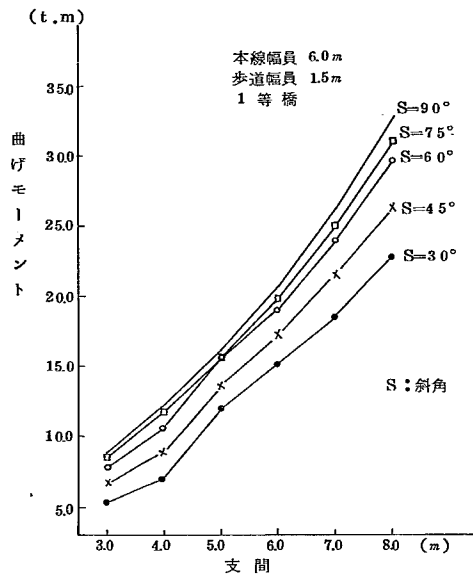


図-20.2

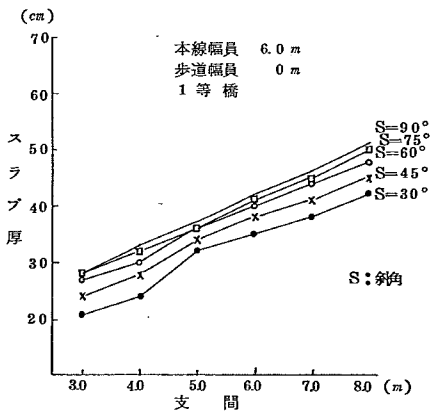


図-21.1

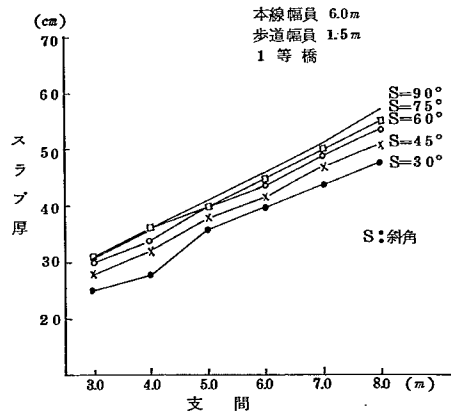


図-21.2

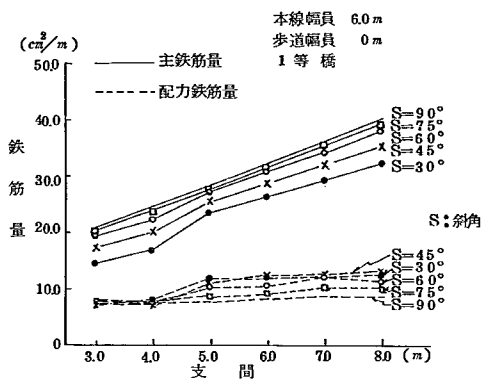


図-22.1

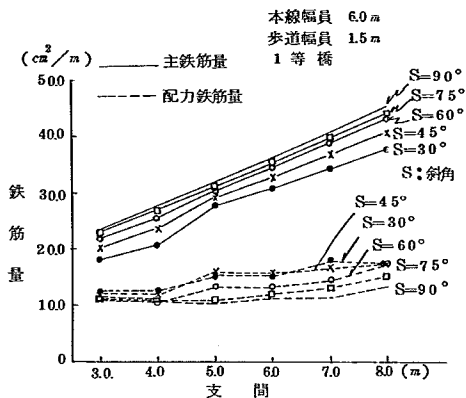


図-22.2

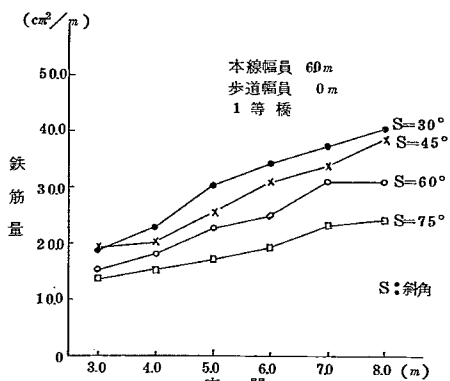


図-23.1

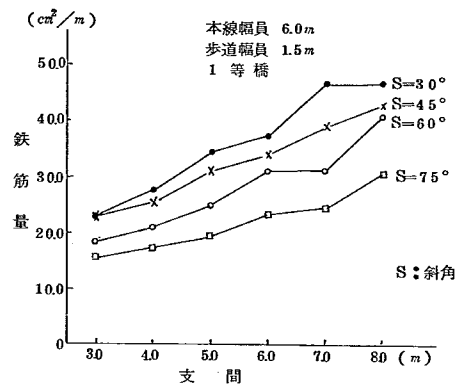


図-23.2

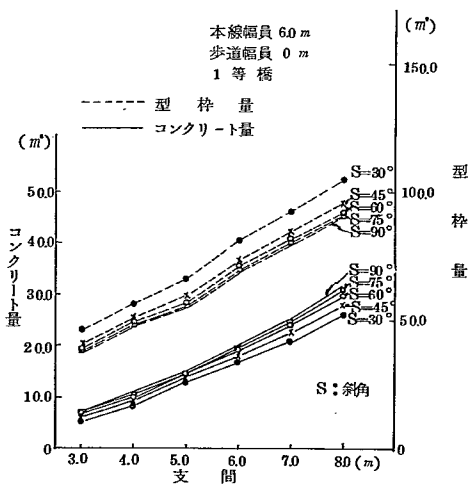


図-24.1

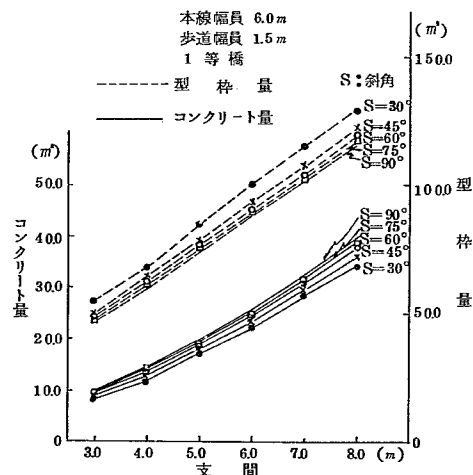


図-24.2

§ 9. 自動設計プログラム

```

begin
array BATA[1:3,1:17],GNM[1:3,1:17], BATT[1:17],GMM[1:17],
A[1:34],B[1:20],XX[0:15],YR[1:20],CON[1:6],
KAT[1:12],XW[1:10];
real
D1,MH,N2,ST,ST1,WL,X,L2,SLV,ASV,GKV,V,SA,CA,E,MD,ML,M,P,K,J,L1,VV18,
HONV1,HONV2,HONV3,HONV4,HONV5,HONV6,HONV7,HONV8,HHK,HHK1,HHK2,W,WX,
S,AAS,WC,WS,AS,SAS,KAS,K1,SS,CS,AA,HAS1,AT,AH,M1,AAT,L6,SSSS3,P5,
PP5,DD7,H1,H2,H3,H5,H7,H8,HH5,HH8,Y1,Y3,Y4,YY3,N,M2,YAS,SS1,K2,PH,
AS5,D5,H4,H77,H9,HH7,Y2,Y6,Y7,WI,WII,WII,WIII,ZI,SYUT1,SYUT3,SYUT4,
SYUT6,SYUT7,SYUT9,SYUT10,SYUT12,HIR1,HIR3,KMTA1,KMTA3,KMTA4,KMTA6,
KMTA7,KMTA8,KMTA9,HH3,HH4,HH77,HH9,S1,S2,S3,S22,S33,S44,S55,S66,S10,
S11,SS12,SS13,S77,S88,S99,S111,SSS6,SS14,SS15,SS16,SS17,KM1,KM2,KM3,
KM5,KM6,SSS1,SSS2,SSS3,SSS4,SSS5,SSS9,SSS10,SSS11,SSS12,YOS1,YOS3,
YOS4,ZIF1,ZIF2,ZIF3,SSS7,SSS8,ZIF4,ZIF5,ZIF6,ANK1,ANK2,ANK3,ANK4,
ANK5,QOKEI,BB1,BB2,BB3,BB4,B1,B2,B3,B4,GG1,GG2,GG3,GG4,G1,G2,G3,G4,
NN,MY1,MY5,WY,G0,X1,BL,MX1,MX5,MX9,MXFU,MXCEN,G00,MK,MC,ASX,STT,
STT1,AAASS,AASS,V1,V3,V7,V8,V9,V10,SR1,SR2,ASK,V11,V12,V13,V14,V15,
V16,V17,V18,SAD,FAD,WF;
integer I,D,SI1,SI2,S15,DDD,II,SII,KM4,KM7,H6,HH6,Y5,V2,V5,V4,V6,INDEX,
SLAB;
procedure SRY1(I,SR1,SR2);
integer I; real SR1,SR2;
begin
switch SW=W1,W2,W3,W4,W5,W6,W7,W8,W9,W10,W11,W12,W13,W14,
W15,W16,W17,W18,W19,W20,W21,W22,W23,W24,W25,W26,
W27,W28,W29,W30,W31,W32,W33,W34,W35;
procedure G; go to EN;
go to SW[I];
W1: SR1=0; SR2=0; G; W2: SR1=25; SR2=0.559; G;
W3: SR1=20; SR2=0.559; G; W4: SR1=15; SR2=0.559; G;
W5: SR1=25; SR2=0.994; G; W6: SR1=12.5; SR2=0.559; G;
W7: SR1=20; SR2=0.994; G; W8: SR1=10; SR2=0.559; G;
W9: SR1=25; SR2=1.55; G; W10: SR1=15; SR2=0.994; G;
W11: SR1=20; SR2=1.55; G; W12: SR1=12.5; SR2=0.994; G;
W13: SR1=25; SR2=2.24; G; W14: SR1=10; SR2=0.994; G;
W15: SR1=15; SR2=1.55; G; W16: SR1=20; SR2=2.24; G;
W17: SR1=25; SR2=3.05; G; W18: SR1=12.5; SR2=1.55; G;
W19: SR1=15; SR2=2.24; G; W20: SR1=20; SR2=3.05; G;
W21: SR1=10; SR2=1.55; G; W22: SR1=25; SR2=3.05; G;
W23: SR1=12.5; SR2=2.24; G; W24: SR1=20; SR2=3.98; G;
W25: SR1=25; SR2=5.03; G; W26: SR1=15; SR2=3.65; G;
W27: SR1=10; SR2=2.24; G; W28: SR1=12.5; SR2=3.05; G;
W29: SR1=20; SR2=5.03; G; W30: SR1=15; SR2=3.98; G;
W31: SR1=10; SR2=3.05; G; W32: SR1=12.5; SR2=3.98; G;
W33: SR1=15; SR2=5.03; G; W34: SR1=10; SR2=3.98; G;
W35: SR1=10; SR2=3.98; G;
EN;
end;
procedure SRY2(I,W,H1,Z);
real W,H1,Z; integer I;
begin
switch SW=S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,S13,S14,S15;
procedure G; go to EN;
go to SW[I-5];
S1: H1=0.20; W=0.994; Z=24; G; S2: H1=0.10; W=0.559; Z=18; G;
S3: H1=0.25; W=1.55; Z=30; G; S4: H1=0.15; W=0.994; Z=24; G;
S5: H1=0.20; W=1.55; Z=30; G; S6: H1=0.125; W=0.994; Z=24; G;
S7: H1=0.25; W=2.24; Z=34; G; S8: H1=0.10; W=0.994; Z=24; G;
S9: H1=0.15; W=1.55; Z=30; G; S10: H1=0.20; W=2.24; Z=30; G;
S11: H1=0.125; W=1.55; Z=30; G; S12: H1=0.15; W=2.24; Z=34; G;
S13: H1=0.10; W=1.55; Z=30; G; S14: H1=0.125; W=2.24; Z=34; G;
S15: H1=0.10; W=2.24; Z=34; G;
EN;
end;

```

```

procedure HAIKINA(AS,I,A,SI);
  value AS; real AS;
  integer I,SI; array A;
  begin
    A[1]=0.0; A[2]=2.85; A[3]=3.57; A[4]=4.75; A[5]=5.08;
    A[6]=5.70; A[7]=6.35; A[8]=7.13; A[9]=7.92; A[10]=8.47;
    A[11]=9.90; A[12]=10.16; A[13]=11.40; A[14]=12.70; A[15]=13.20;
    A[16]=14.25; A[17]=15.52; A[18]=15.84; A[19]=19.00; A[20]=19.40;
    A[21]=19.80; A[22]=20.28; A[23]=22.80; A[24]=25.35; A[25]=25.64;
    A[26]=25.87; A[27]=28.50; A[28]=31.04; A[29]=32.05; A[30]=33.80;
    A[31]=38.80; A[32]=40.56; A[33]=42.73; A[34]=50.70;
    I=1;
    SC: if AS>A[I] then begin I=I+1; go to SC; end;
    SI=I;
  end;
procedure PX(I);
  value I; integer I;
  begin real R,D,H,P1; integer J;
    if I=1 then begin PRINTS('###NO#NEED'); go to KI; end;
    if I=35 then begin PRINTS('###OVER'); go to KI; end;
    J=1;
    for R=10,10,10,13,10,13,10,16,13,16,13,19,13,16,19,22,16,
      19,22,16,25,19,25,29,22,19,22,29,25,22,25,29,25 do
      begin J=J+1; if I=J then begin D=R; go to LL1; end; end;
    LL1:
      J=1;
      for R=4,5,6,7,4,8,5,10,4,6,7,5,8,4,10,6,7,5,4,8,6,7,
        5,10,4,8,5,4,6,7,10,8,5,6,7,10,8,6,7,10 do
        begin J=J+1; if I=J then begin H=R; go to LL2; end; end;
    LL2:
      P1=100/H;
      if H=6,7 then P1=15.0;
      PRINTS('D'); PRINTI(2,D); PRINTS('-'); PRINTF(2,1,H);
      PRINTS('pitch'); PRINTF(2,1,P1); PRINTS('cm'); CRLF(1);
    KI:
  end;
procedure HAIKINB(AAS,II,B,SII);
  value AAS; real AAS; integer II,SII; array B;
  begin
    B[1]=2.85; B[2]=3.57; B[3]=4.75; B[4]=5.08;
    B[5]=5.70; B[6]=6.35; B[7]=7.13; B[8]=7.92;
    B[9]=8.47; B[10]=9.90; B[11]=10.16; B[12]=11.40;
    B[13]=12.70; B[14]=13.20; B[15]=14.25; B[16]=15.84;
    B[17]=19.00; B[18]=19.80; B[19]=22.80; B[20]=28.50;
    II=1;
    SZ: if AAS>B[II] then
      begin II=II+1; go to SZ; end;
    SII=II;
  end;
procedure PPX(II);
  value II; integer II;
  begin real R,P1,P2,H; integer J,D;
    J=0;
    for R=10,10,10,13,10,13,10,16,13,16,13,19,13,16,
      19,16,19,16,19,19 do
      begin J=J+1; if II=J then begin D=R; go to LL3; end; end;
    LL3: J=0;
    for R=4,5,6,7,4,8,5,10,4,6,7,5,8,
      4,10,6,7,5,8,6,7,10,8,10 do
      begin J=J+1; if II=J then begin H=R; go to LL4; end; end;
    LL4: P1=100/H; if H=6,7 then P1=15.0; P2=P1*3;
      PRINTS('D'); PRINTI(2,D); PRINTS('-'); PRINTF(2,1,H);
      PRINTS('pitch'); PRINTF(2,1,P1); PRINTS('cm##UPPER#honsu--D');
      PRINTI(2,D); PRINTS('pitch'); PRINTF(2,1,P2); PRINTS('cm');
      CRLF(2);
  end;

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real procedure SIND(S);
  value S;  real S;
  begin
    real PAI;
    PAI=3.141592653589793;  SIND=SIN(S*PAI/180);
  end;
real procedure COSND(S);
  value S;  real S;
  begin
    real PAI;
    PAI=3.141592653589793;  COSND=COS(S*PAI/180);
  end;
procedure TYP0UT(S1,N0,S2,NA,S3,H0N,S4,UNI,S5,H0NW,S7,WI,S6,USE);
  integer S1,S2,NA,S3,H0N,S4,S5,S6,S7;
  real UNI,WI,H0NW;  string N0,USE;
  begin
    SPACE(S1); PRINTS(N0); SPACE(S2); PRINTI(5,NA);
    SPACE(S3); PRINTI(6,H0N); SPACE(S4); PRINTF(1,3,UNI);
    SPACE(S5); PRINTF(2,3,H0NW); SPACE(S7); PRINTF(7,2,WI);
    SPACE(S6); PRINTS(USE);
  end;
procedure HOKAN(HH1,HH2,HH3,HH4,KK1,KK2,KK3,KK4,H1,H2,H3,H4,
  K1,K2,K3,K4,N);
  real HH1,HH2,HH3,HH4,KK1,KK2,KK3,H1,KK4,H2,H3,K1,H4,K2,K3,K4,N;
  begin
    H1=HH1+(H1-HH1)*N;  H2=HH2+(H2-HH2)*N;  H3=HH3+(H3-HH3)*N;
    H4=HH4+(H4-HH4)*N;
    K1=KK1+(K1-KK1)*N;  K2=KK2+(K2-KK2)*N;  K3=KK3+(K3-KK3)*N;
    K4=KK4+(K4-KK4)*N;
  end;
READARRAY(BATA,1,3,1,15); READARRAY(GNM,1,3,1,15);
READARRAY(BATT,1,17); READARRAY(GNM,1,17);
START:
  READ(L1,W,WY,S,SLAB,INDEX); if L1=0 then go to END;
  if WY=0 then go to START1;
  WF=0.30;
  G0=((WY-WF+0.30)/3)*((0.25+0.15*2)/(0.25+0.15));
  XX[0]=((0.15+0.25)/2)*(WY-WF+0.30)*2.5;
  XX[1]=XX[0]*G0;
  XX[2]=0.100*(WY-WF+0.15);
  XX[3]=0.05*(WY-WF)*2.3;
  XX[4]=XX[3]*(WY-WF)/2;
  XX[5]=0.05*WF*2.3;
  XX[6]=0.25*WF*2.5;
  XX[7]=0.5*(WY-WF);
  XX[8]=XX[7]*((WY-WF)/2);
  XX[9]=0.5*WF;
  XX[10]=XX[1]+XX[2]+XX[4]+XX[8];
  XX[11]=XX[0]+XX[3]+XX[5]+XX[6]+XX[7]+XX[9]+0.100;
  X1=L1/(W+2*WF);
  I=1;
  for BL=0,0,0.25,0.3,0.35,0.4,0.5,0.6,0.7,0.8,0.9,1.0,
    1.25,1.5,1.75,2.0,2.5,3.0 do
    begin YR[I]=BL;  I=I+1;  end;
  I=1;
STA:
  if YR[I]<X1 ^ YR[I+1]>X1 then
    begin
      BB1=BATA[1,I]; BB2=BATA[2,I]; BB3=BATA[3,I]; BB4=BATT[I];
      GG1=GNM[1,I]; GG2=GNM[2,I]; GG3=GNM[3,I]; GG4=GMM[I];
      B1=BATA[1,I+1]; B2=BATA[2,I+1]; B3=BATA[3,I+1]; B4=BATT[I+1];
      G1=GNM[1,I+1]; G2=GNM[2,I+1]; G3=GNM[3,I+1]; G4=GMM[I+1];
      if YR[I]<X1 ^ YR[I+1]>X1 then
        begin
          N=(X1-YR[I])/(YR[I+1]-YR[I]);
          HOKAN(BB1,BB2,BB3,BB4,GG1,GG2,GG3,GG4,B1,B2,B3,B4,G1,
            G2,G3,G4,N);
        end;
    end else begin I=I+1; go to STA; end;

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MX1=XX[11]*L1*B1+XX[10]*G1;
MX5=XX[11]*L1*B2+XX[10]*G2;
MX9=XX[11]*L1*B3+XX[10]*G3;
MXFU=(MX1+MX9)*100000;
MXCEN=(2*MX5)*100000;
MY1=(XX[10]*(-1))*100000;
MY5=((XX[11]*L1*B4+XX[10]*G4)*2)*100000;
MH=0.250*1.100*100000;
MH=ABS(MY1)+MH;
AS=MH/(1600*(7/8)*22.0);
HAIKINA(AS,I,A,SI5);
SRY1(I,SR1,SR2);
AASS=A[I]; AAASS=AS;

START1:
ST=0;
L6=L1/5;
CA=70; SA=1600;
WL=if WY=0 then W+0.70 else W+WF*2;
X=L1/WL;
if X>1.3 ^ S<90 ^ S<30 then L2=L1;
if X>0.7 ^ X<1.3 ^ S<75 then L2=L1*SIND(S);
if X>0.7 ^ X<1.3 ^ S<75 ^ S<30, then
    L2=(L1*SIND(S)+L1)/2;
if X<0.7 ^ S<90 ^ S<30 then L2=L1*SIND(S);
if L1<4 then ST1=15;
if L1>4 ^ L1<6 then ST1=20;
if L1>6 then ST1=25;

LM:
ST1=ST1+ST;
SLV=(2500*ST1)/100;
ASV=2300*0.10;
GKV=if WY=0 then 100/WL else 0;
V=ASV+SLV+GKV;
E=15;
MD=100*(V*L2+2)/8;
if SLAB=1 then ML=100000*(1.8*L2+0.5);
if SLAB=2 then ML=0.7*(100000*(1.8*L2+0.5));
M=if WY=0 then 0 else MXFU;
M=MD+ML+M;
MC=if WY=0 then 0 else MXCEN;
MC=MD+ML+MC;
M=if M<MC then M else if M<MC then MC else 0;
K1=SA/CA;
SS=E/(E+K1);
CS=SQRT(2*K1/(SS*(1-SS/3)));
D1=CS*SQRT(M/(SA*100));
if D1>ST1 then begin ST=1.0; go to LM; end;
D2=D1+3.5;
D=D2+1;
K1=20;

STX:
if D<K1 ^ D<K1+10 then D5=(K1+10)/100 else
    begin K1=K1+10; go to STX; end;
DD7=L1+D5;
if WY=0 then go to LZ;
V1=((DD7-0.10)/2)*100;
V2=ENTIER(V1/SR1);
V3=V1-(V2*SR1);
V4=if V3=SR1 then 0 else 1;
V5=V2+V4;
V6=V5*2-1;
V7=((WY*1000+350-150)/SIND(S))+200+D*10-35;
V8=V7*SR2*V6;
V9=((WY*1000+350-100)/SIND(S))+500;
V10=V9*SR2*V6;

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LZ:

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AS:=H/(SA*(1-SS/3)*D1);
HAIKINA(AS,I,A,SI1);
SAS:=AS; KAS:=A(I);
SPY1(I,P5,WI); P5:=P5/100;
S11=(WL/SIND(S))*100;
S22=ABS((DD7-C,10)*COSND(S)*100);
S22:=ABS(S22); S33=S22/2;
S44:=S11/2;
S55:=if WY=0 then S44-(10/SIND(S))-S33 else
      ((WL-0,10)/SIND(S))*100/2;
S66=ENTIER(S55/(P5*100));
SS12=S66; SS13=((S66/2)+1)*2+1;
KM4:=S55*10-P5*1000*S66;
if KM4=0 v KM4=-0 then SS13=SS13-2;
if S66*S66/2*2 then SS13=SS13-1;
S99:=P5*1000;
S10:=S66*S99;
S111=(S55*10)-S10;
SSS1=(L1/10)*1000;
SSS2=((DD7-L1)-0,10)/2)*1000;
SSS3=(D-(3,5*2))*10;
SSSS3=SSS3*1,414;
SSS4=SSS1+SSS2+SSS3;
SSS5=((DD7-2*0,05)*SIND(S))*1000;
SSS6=SSS5/2-SSS4;
SSS7=SSS5/2-(SSS6+SSS3);
SSS8=SSS6*2+SSS1*2+SSS2*2+SSSS3*2;
if S=90 then go to XXX;
S88=ENTIER(S22/(P5*100));
SS14=S88; SS15=((S88/2)+1)*2;
KM4:=S22*10-P5*1000*S88;
if KM4=0 then SS15=SS15+2;
if S88*S88/2*2 then SS15=SS15-1;
SS16=S88*S99;
SS17=(S22*10)-SS16;
SSS9=(DD7/2-0,05)*1000;
SSS10=SSS9-(SSS1+SSS2);
SSS11=SSS9-SSS4;
SSS12=SSS11*2+SSS1*2+SSS2*2+SSSS3*2;

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XXX:

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KM3:=2*P5*100;
KM1=ENTIER(S55/KM3);
KM2=(KM1+1)*2+1;
KM4=(S55*10)-(KM1*KM3*10);
if KM4=0 v KM4=-0 then KM2=KM2-2;
if S=90 then go to XX1;
KM5=ENTIER(S22/KM3);
KM6=(KM5+1)*2+2;
KM7=(S22*10)-(KM5*KM3*10);
if KM7=0 v KM7=-0 then KM6=KM6-2;

```

XX1:

```

P=KAS/(100*D1);
K=SQR(2*15*P+(15*P)+2)-(15*P);
J=1-(K/3);
WC=(2*M)/(K*J*100*(D1+2));
WS=H/(KAS*J*D1);
if WC>CA ^ WS>SA then
  begin ST=1,0; go to LM; end;
if X>0,7 ^ S<45 ^ S>30 then
  HAS1=1,5*(KAS*(0,60/(SQRT(L2)))));
if X>0,7 ^ S<90 ^ S>45 then
  begin
    M1=0,60/(SQRT(L2));
    NN=0,50*(90-S)/45;
    M2=M1+(NN*M1);
    HAS1=KAS*M2;
  end;

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```

    if X<0.7 ^ S<90 ^ S<30 then
      HAS1=KAS*(0.60/(SQRT(L2)));
    if WY=0 then go to X50;
    MY1=1 if ABS(MY1)>ABS(MY5) then ABS(MY1) else
      1 if ABS(MY1)<ABS(MY5) then ABS(MY5) else 0;
    ASX=MY1/(SA*(7/8)*P);
X50:
    AAS=HAS1+(1 if WY=0 then 0 else ASX);
    HAIKINB(AAS,I1,B,SII);
    AT=B[I1];
    SRY2(I1,WI,H1,ZI);
    H2=H1*3;
    H3=(DD7/2)*100; H4=ENTIER((H3-5)/(H2*100));
    H5=1000*(H4*H2); H6=((H3-5)*10)-H5;
    H7=H4+1; H77=(H4+1)*2+1;
    if H6=0 v H6=-0 then H77=H77-2;
    H8=H2*1000; H9=H5+H6;

    if WY=0 then go to L31;
    V11=(WY-0.20+0.25)*100;
    V12=ENTIER(V11/KM3);
    V13=V11-(V12*KM3);
    V14=1 if V13=0 then 0 else 1;
    V15=(V12+1+V14)*2;
    V16=(V15+2)*2;
    V17=(DD7-0.10)*1000;
    V18=V16*V17*SR2;
L31:
    HH3=(DD7/2)*100;
    HH4=ENTIER((HH3-5)/(H1*100));
    HH5=1000*(HH4*H1); HH6=((HH3-5)*10)-HH5;
    HH7=HH4+1; HH77=HH7*2+1;
    if HH6=0 v HH6=-0 then HH77=HH77-2;
    HH8=H1*1000; HH9=HH5+HH6;
    if S=90 then YAS=0;
    if S<90 ^ S<75 then YAS=KAS*0.6;
    if S<75 ^ S<60 then YAS=KAS*0.8;
    if S<60 ^ S<45 then YAS=KAS*1.0;
    if S<45 ^ S<30 then YAS=KAS*1.2;
    if S<30 ^ S<15 then YAS=KAS*1.4;
    AS=YAS;
    if S=90 then go to SW;
    HAIKINA(AS,I,A,SI2);
    AAT=A[I];
    SRY1(I,PP5,WI); PP5=PP5/100;
L11:
    Y1=ENTIER((L6*100)/(PP5*100));
    Y2=Y1+2; Y3=2*Y2; YY3=Y3/2;
    Y4=(PP5*1000)*Y1; Y5=(L6*1000)-Y4;
    if Y5=0 v Y5=-0 then
      begin Y2=Y2-1; Y3=Y2*2; YY3=Y3/2; end;
    Y6=PP5*1000; Y7=Y4+Y5;
SW:
    S1=600; SS1=S1+(S1*0.5); K2=0.2;
    PH=K2*V*DD7; AS5=PH/SS1;
    NEWPAGE;
    PRINTS('#####REINFORCED----CONCRETE
      ----SLAB----BRIDGE----');
    if SLAB=1 then PRINTS('1--TOKYO*****');
    if SLAB=2 then PRINTS('2--TOKYO*****');
    CRLF(2); SPACE(5); PRINTS('****SPAN=');
    PRINTF(2,2,L1); PRINTS('#####DESIGN#SPAN=');
    PRINTF(2,2,L2); PRINTS('#####KYOTYO=');
    PRINTF(2,2,DD7); PRINTS('*****');
    CRLF(2); PRINTS('W=');
    PRINTF(2,2,W); PRINTS('#####F='); PRINTF(1,2,WY);
    PRINTS('#####TOTAL#WIDTH=');
    WX=1 if WY=0 then WL else (W*2*WF);

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PRINTF(2,2,WX); PRINTS('###SKEW=');
PRINTI(2,S); PRINTS('#####X='); PRINTF(1,3,X);
CRLF(2); PRINTS('DEADLOAD='); PRINTF(5,2,V);
PRINTS('kg###'); PRINTS('DEADMOMENT=');
PRINTF(8,2,MD);
PRINTS('kg,cm#####LIVEMOMENT=');
PRINTF(8,2,ML); PRINTS('kg,cm'); CRLF(2);
if WY=0 then go to XX11;
PRINTS('H0D0#MOMENT'); CRLF(2);
SPACE(10); PRINTS('FMX='); PRINTF(7,2,MXFU);
PRINTS('kg,cm##FMC='); PRINTF(7,2,MXCEN);
PRINTS('kg,cm##FMY='); PRINTF(7,2,MY1);
PRINTS('kg,cm#####FMC='); PRINTF(7,2,MY5); PRINTS('kg,cm');
CRLF(2);
XX11:
SPACE(10); if WY=0 then go to XXX11;
PRINTS('SEKKEI#MOMENT='); PRINTF(7,2,MH);
PRINTS('kg,cm#####');
XXX11:
PRINTS('TOTAL#MOMENT=');
PRINTF(8,2,M); PRINTS('kg,cm'); CRLF(1);
for X=1 step 1 until 119 do PRINTS(','); CRLF(2);
PRINTS('SYUTEKKEIN---AS='); PRINTF(2,2,SAS);
PRINTS('cm2/m##A[I]='); PRINTF(2,2,KAS);
PRINTS('cm2/m##YUKO#DAKA='); PRINTI(2,ST1);
PRINTS('cm##KETTEI#DAKA(d+3,5)='); PRINTI(2,D);
PRINTS('cm'); CRLF(2);
PRINTS('###1#atar1#SYUTEKKIN#honsu-----');
PRINTS('#####'); PX(SI1); CRLF(1);
PRINTS('##SYU#TEKKIN#TOTAL##SISYO#TYOKKAKU##No1=');
PRINTI(2,SS13); PRINTS('hon###No2='); PRINTI(3,SS12);
PRINTS('hon###'); PRINTI(2,S66); PRINTS('x');
PRINTI(3,P5*1000); PRINTS('='); PRINTI(5,S10);
PRINTS('mm##'); PRINTI(3,S11); PRINTS('mm#SL=');
PRINTI(5,S55*10); PRINTS('mm'); CRLF(1);
PRINTS('#####'); PRINTI(4,SSS1); PRINTS('mm#SSS2=');
PRINTI(4,SSS2); PRINTS('mm#SSS3=');
PRINTI(3,SSS3); PRINTS('mm#SSS4='); PRINTI(4,SSS4);
PRINTS('mm#SSS5='); PRINTI(5,SSS5);
PRINTS('mm'); CRLF(1);
PRINTS('#####'); PRINTI(4,SSS6); PRINTS('mm#SSS7=');
PRINTI(4,SSS7); PRINTS('mm#MAGEAGE'); PRINTI(3,SSS3);
PRINTS('mm'); PRINTS('###SS8='); PRINTI(5,SSS8);
PRINTS('mm'); CRLF(1);
if S=90 then go to XXPP1;
PRINTS('#####SPAN##HEIKO#####No3=');
PRINTI(2,SS15); PRINTS('hon###No4='); PRINTI(3,SS14);
PRINTS('hon##'); PRINTI(2,S88); PRINTS('x');
PRINTI(3,P5*1000); PRINTS('='); PRINTI(5,SS16);
PRINTS('mm##'); PRINTI(3,SS17);
PRINTS('mm#SL1='); PRINTI(5,S22*10); PRINTS('mm');
CRLF(1); PRINTS('##SKEW#WIDTH='); PRINTI(5,S11*10);
PRINTS('mm#S22='); PRINTI(4,S22*10); PRINTS('mm#S11/2=');
PRINTI(4,S44*10); PRINTS('mm#ZIFUKU=');
PRINTI(4,S44*10-S33*10-S55-10);
PRINTS('mm#SKEW#SYAD0=');
PRINTI(5,S11*10-2*(S44*10-S33*10-S55*10));
PRINTS('mm'); CRLF(1);
PRINTS('#####'); PRINTI(5,SSS9); PRINTS('mm#SSS10=');
PRINTI(5,SSS10); PRINTS('mm#SSS11='); PRINTI(5,SSS11);
PRINTS('mm#SSS12='); PRINTI(5,SSS12); PRINTS('mm');
CRLF(2);
XXPP1:
PRINTS('##KUMITATE#TEKKIN#TOTAL##SISYO#TYOKKAKU#####');
PRINTI(3,KM2); PRINTS('hon#####'); PRINTI(3,KM1);
PRINTS('x'); PRINTI(3,KM3*10); PRINTS('=');
PRINTI(5,KM1*KM3*10); PRINTS('mm##'); PRINTI(3,KM4);
PRINTS('mm#SL='); PRINTI(5,S55*10); PRINTS('mm'); CRLF(1);

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if S=90 then go to XX2;
SPACE(27); PRINTS('SPAN####HEIKO#####'); PRINTI(3,KM6);
PRINTS('hon#####'); PRINTI(3,KM5); PRINTS('x');
PRINTI(3,KM3*10); PRINTS('='); PRINTI(5,KM3*KM5*10);
PRINTS('mm###'); PRINTI(3,KM7); PRINTS('mm#SL1=');
PRINTI(5,S22*10); PRINTS('mm'); CRLF(1);
XX2:
for I=1 step 1 until 119 do PRINTS('+'); CRLF(2);
PRINTS('HAIRYOKU#TEKKIN#LOW---AS='); PRINTF(2,2,AAS);
PRINTS('cm2/m'); SPACE(14); PRINTS('A[I]=');
PRINTF(2,2,AT); PRINTS('cm2/m '); CRLF(1);
PRINTS('#####1m#atar1#HAIRYOKU#TEKKIN#LOW#honsu---');
PPX(SII);
PRINTS('#####HAIRYOKU#TEKKIN#LOW####TOTAL#honsu=');
PRINTI(2,HH77); PRINTS('hon#####'); PRINTI(2,HH4);
PRINTS('x'); PRINTI(3,H1*1000); PRINTS('='); PRINTI(5,HH5);
PRINTS('mm#####'); PRINTI(3,HH6); PRINTS('mm#####');
PRINTI(5,HH9); PRINTS('mm'); CRLF(1);
PRINTS('#####HAIRYOKU#TEKKIN#UPPER##TOTAL#honsu=');
PRINTI(2,H77); PRINTS('hon#####'); PRINTI(2,H4);
PRINTS('x'); PRINTI(3,H8); PRINTS('='); PRINTI(5,H5);
PRINTS('mm#####'); PRINTI(3,H6); PRINTS('mm#####');
PRINTI(5,H9); PRINTS('mm'); CRLF(2);
if S=90 then go to XX3;
for I=1 step 1 until 119 do PRINTS('-'); CRLF(2);
PRINTS('YOZIN#TEKKIN-----AS='); PRINTF(2,2,YAS);
PRINTS('cm2/m#####A[I]='); PRINTF(2,2,AAT);
PRINTS('cm2/m#####SPAN/5='); PRINTF(1,2,L6); PRINTS('m');
CRLF(2);
PRINTS('#####1m#atar1#YOZIN#TEKKIN#honsu-----');
PRINTS('-----'); PX(SI2); CRLF(1);
PRINTS('#YOZIN#TEKKIN#TOTAL###YV='); PRINTI(2,Y2);

PRINTS('hon#####YH='); PRINTI(2,Y2);
PRINTS('hon##TOTAL='); PRINTI(3,Y3); PRINTS('hon###');
PRINTI(2,Y1); PRINTS('x'); PRINTI(3,Y6); PRINTS('=');
PRINTI(4,Y4); PRINTS('mm#####'); PRINTI(3,Y5);
PRINTS('mm#####'); PRINTI(4,Y7); PRINTS('mm'); CRLF(1);
XX3:
if WY=0 then go to XX33;
for I=1 step 1 until 119 do PRINTS(','); CRLF(2);
PRINTS('##HARIDASHIBU#SYUTEKKIN---AS=');
PRINTF(2,2,AAASS); PRINTS('cm2/m#####A[I]=');
PRINTF(2,2,AAASS); PRINTS('cm2/m'); CRLF(2);
PRINTS('#####1m#atar1#SYUTEKKIN#honsu-----'); PX(SI5);
CRLF(1); PRINTS('###TOTAL#honsu='); PRINTI(3,V6);
PRINTS('hon#####'); PRINTI(2,V2); PRINTS('x');
PRINTF(3,1,SR1*10); PRINTS('='); PRINTI(5,V2*SR1*10);
PRINTS('mm#####'); PRINTI(3,V3*10); PRINTS('mm#####');
PRINTI(5,V1*10); PRINTS('mm'); CRLF(2);
PRINTS('##HAIRYOKU#TEKKIN'); PRINTI(2,V2);
PRINTS('x'); PRINTF(3,1,SR1*10); PRINTS('=');
PRINTI(5,V2*SR1*10); PRINTS('mm#####'); PRINTI(3,V3*10);
PRINTS('mm#####'); PRINTI(5,V1*10); PRINTS('mm');
CRLF(2); PRINTS('##HAIRYOKU#TEKKIN'); PRINTI(2,V12);
PRINTS('x'); PRINTI(3,KM3*10); PRINTS('=');
PRINTI(4,V12*KM3*10); PRINTS('mm#####');
PRINTI(4,(V11-V12*KM3)*10); PRINTS('mm#####');
PRINTI(4,V11*10); PRINTS('mm'); CRLF(1);
for I=1 step 1 until 119 do PRINTS('+'); CRLF(2);
XX33:
PRINTS('TEKKIN#SHEARING#STRESS='); PRINTF(3,2,SS1);
PRINTS('kg/cm2#EARTHQUAKE#FORCE-----Ph=');
PRINTF(4,2,PH); PRINTS('ANKA#TEKKIN-----AS=');
PRINTF(2,2,AS5); PRINTS('cm2/m'); CRLF(1);
if AS5<0.713 then

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begin
  WIII=0.559; SPACE(100); PRINTS('D10mm');
end;
if AS5≥0.713 ^ AS5<1.27 then
begin
  WIII=0.994; SPACE(100); PRINTS('D13mm');
end;
if AS5≥1.27 ^ AS5<1.98 then
begin
  WIII=1.55; SPACE(100); PRINTS('D16mm');
end;
if AS5≥1.98 ^ AS5<2.85 then
begin
  WIII=2.24; SPACE(100); PRINTS('D19mm');
end;
if AS5≥2.85 ^ AS5<3.88 then
begin
  WIII=3.05; SPACE(100); PRINTS('D22mm');
end;
if AS5≥3.88 ^ AS5<5.07 then
begin
  WIII=3.98; SPACE(100); PRINTS('D25mm');
end;
if AS5≥5.07 then
begin
  WIII=5.03; SPACE(100); PRINTS('D29mm');
end;
CRLF(1);
for I=1 step 1 until 119 do PRINTS('+'); CRLF(2);
NEWPAGE;
for X=1 step 1 until 104 do PRINTS('-'); CRLF(1);
PRINTS('I####S#T#R#E#S#S'); SPACE(86);
PRINTS('I'); CRLF(1); PRINTS('I'); SPACE(102);
PRINTS('I'); CRLF(1);
PRINTS('I'); SPACE(3); PRINTS('ALLOWABLE#STRESS#OF
#CONCRETE'); PRINTF(3,2,CA);
PRINTS('kg/cm2####ALLOWABLE#STRESS#OF#REINFORCED');
PRINTF(5,2,SA); PRINTS('kg/cm2'); PRINTS('####I');
CRLF(1); PRINTS('I'); SPACE(102); PRINTS('I');
CRLF(1);
PRINTS('I###TRUE#CONCRETE#STRESS-----');
PRINTF(3,2,WC); PRINTS('kg/cm2####TRUE#REINFRCD
#STRESS-----'); PRINTF(5,2,WS);
PRINTS('kg/cm2####I'); CRLF(1);
for X=1 step 1 until 104 do PRINTS('-');
CRLF(1); SYUT1=((DD7-0.10)*SIND(S))*1000;
Y1=W1*SYUT1; HONV1=Y1/1000;
SYUT3=Y1*SS13/1000;
SYUT4=SSS8;
Y2=W1*SYUT4; HONV2=Y2/1000;
SYUT6=Y2*SS12/1000;
if S=90 then go to XX4;
SYUT7=((DD7-0.10)*1000;
Y3=W1*SYUT7; HONV3=Y3/1000;
SYUT9=Y3*SS15/1000; SYUT10=SSS12;
Y4=W1*SYUT10; HONV4=Y4/1000;
SYUT12=Y4*SS14/1000;
XX4:
HIR1=((WL-0.20)/SIND(S))*1000;
Y5=W1*HIR1; HONV5=Y5/1000;
HIR3=Y5*(H77+HH77)/1000;
KMTA1=SYUT1;
Y6=0.994*KMTA1; HONV6=Y6/1000;
KMTA3=Y6*KM2/1000;
if S=90 then go to XX5;
KMTA4=((DD7-0.10)*1000;
Y7=0.994*KMTA4; HONV7=Y7/1000;

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KMTA6=Y7*KM6/1000; YOS1=(L1/5)*1000;
H1=WII*YOS1; HONV8=H1/1000;
YOS3=H1*YY3*2/1000; YOS4=H1*YY3*2/1000;
XX5;
ZIF1=(DD7-0.10)*1000;
ZIF2=WII*ZIF1;
ZIF3=ZIF2*4/1000;
ZIF4=if WY=0 then (250/SIND(S))+(ZI*2)+(((D+30)*10)-
(3.5*10)*2)*2 else (200/SIND(S))+(ZI*2)+
(250-(3.5*10)*2)*2;
ZIF5=WII*ZIF4; ZIF6=ZIF5*(H77*2)/1000;
KMTA7=if WY=0 then 400+215+230 else (D-(2*3.5)*2)*
10+300*2+250;
KMTA8=KMTA7*0.559; HHK1=H77*(KM1+2);
HHK2=H77*(KM5-1);
if S=90 then HHK2=0;
HHK=HHK1+HHK2; KMTA9=KMTA8*HHK/1000;
ANK1=(D/2)*10+800; ANK2=ANK1*WII;
ANK3=ENTIER(S44/100)*2+1; ANK4=ANK2*ANK3/1000;
XW[1]=V7*SR2/1000; XW[2]=V8/1000;
XW[3]=V9*SR2/1000; XW[4]=V10/1000;
XW[5]=V17*SR2/1000; XW[6]=V18/1000;
if WY=0 then
begin
for I=1 step 1 until 6 do XW[I]=0;
end;
if S=90 then
SYUT9=SYUT12*KMTA6=YOS3=YOS4=0;
GOKEI=SYUT3+SYUT6+SYUT9+SYUT12+HIR3+KMTA3+KMTA6
+YOS3+YOS4+ZIF3+ZIF6+KMTA9+ANK4+XW[2]+XW[4]+XW[6];
N=if WY=0 then W+0.70 else W+2*WF;
CON[1]=DD7*(D/100)*N;
CON[2]=if WY=0 then DD7*0.35*0.40*2 else DD7*0.35*0.15*2;
CON[3]=if WY=0 then 0 else DD7*0.25*WF*2;
CON[4]=if WY=0 then 0 else (DD7*0.40*(WY-WF+0.30));
CON[5]=CON[1]+CON[2]+CON[3]+CON[4];
KAT[1]=if WY=0 then (W+0.70)/SIND(S)*DD7*SIND(S)
else (W+0.60)/SIND(S)*DD7*SIND(S);
KAT[2]=if WY=0 then (W+0.70)/SIND(S)*(D/100)*2
else (W+0.60)/SIND(S)*(D/100)*2;
KAT[3]=if WY=0 then (W/SIND(S))*0.35*2
else (W/SIND(S))*0.25*2;
KAT[4]=DD7*(D/100)*2;
KAT[5]=if WY=0 then 0 else DD7*0.15*2;
KAT[6]=if WY=0 then (0.4/SIND(S))*DD7*2
else (0.35/SIND(S))*DD7*2;
KAT[7]=if WY=0 then 0.35*DD7*2 else 0.15*DD7*2;
KAT[8]=(0.05/SIND(S))*DD7*2;
KAT[9]=if WY=0 then 0 else 0.15*DD7*2;
KAT[10]=if WY=0 then 0 else
(WY/SIND(S))*DD7*SIND(S)*2;
KAT[11]=KAT[1]+KAT[2]+KAT[3]+KAT[4]+KAT[5]
+KAT[6]+KAT[7]+KAT[8]+KAT[9]+KAT[10];
SAD=(W*DD7*0.10)/SIND(S);
FAD=if WY=0 then 0 else (WY*2*DD7*0.05)/SIND(S);
PRINTS('#####F#R#R#0#R#I#S#T'); CRLF(2);
PRINTS('#####NAGASA(mm)#####HONSU(hon)##UNITWEIGHT
(kg/m)##1honWEIGHT(kg)#WEIGHT(kg)#####
USE####');
CRLF(2);
TYP0UT(3,'1',4,SYUT1,3,SS13,7,WI,6,HONV1,6,SYUT3,
7,'SHISY0#TYOKKAKU#SYUTEKKIN'); CRLF(1);
TYP0UT(3,'2',4,SYUT4,3,SS12,7,WI,6,HONV2,6,SYUT6,
7,'SHISY0#TYOKKAKU#SYUTEKKIN#MAGEAEGE');
CRLF(1);
if S=90 then go to XX6;

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        TYP0UT(3,'3',4,SYUT7,3,SS15,7,WI,6,HONV3,6,SYUT9,
        7,'SPAN#HEIK0#SYUTEKKIN'); CRLF(1);
        TYP0UT(3,'4',4,SYUT10,3,SS14,7,WI,6,HONV4,6,SYUT12,
        7,'SPAN#HEIK0#SYUTEKKIN#MAGEAGE'); CRLF(1);
XX6:
        TYP0UT(3,'5',4,HIR1,3,H77+HH77,7,WI,6,HONV5,6,HIR3,
        7,'HAIRYOKU#TEKKIN'); CRLF(1);
        TYP0UT(3,'6',4,KMTA1,3,KM2,7,0.994,6,HONV6,6,KMTA3,
        7,'KUMITATE#TEKKIN#SHISYO#TYOKAKU'); CRLF(1);
        if S=90 then go to XX7;
        TYP0UT(3,'7',4,KMTA4,3,KM6,7,0.994,6,HONV7,6,KMTA6,
        7,'KUMITATE#TEKKIN#SPAN#HEIK0'); CRLF(1);
XX7:
        TYP0UT(3,'8',4,ZIF1,3,4,7,WI,6,ZIF2/1000,6,ZIF3,
        7,'ZIFUKU#TEKKIN'); CRLF(1);
        TYP0UT(3,'9',4,ZIF4,3,H77*2,7,WI,6,ZIF5/1000,6,ZIF6,
        7,'ZIFUKU#TEKKIN'); CRLF(1);
        if S=90 then go to XX8;
        TYP0UT(2,'10',4,YOS1,3,YY3*2,7,WI,6,HONV8,6,YOS3,
        7,'Y0ZIN#TEKKIN'); CRLF(1);
        TYP0UT(2,'11',4,YOS1,3,YY3*2,7,WI,6,HONV8,6,YOS4,
        7,'Y0ZIN#TEKKIN'); CRLF(1);
XX8:
        if WY=0 then go to XX9;
        TYP0UT(2,'12',4,V7,3,V6,7,SR2,6,XW[1],6,XW[2],
        7,'HARIDASHIBU#SYUTEKKIN'); CRLF(1);
        TYP0UT(2,'13',4,V9,3,V6,7,SR2,6,XW[3],6,XW[4],7,
        'HARIDASHIBU#HAIRYOKU#TEKKIN'); CRLF(1);
        TYP0UT(2,'14',4,V17,3,V16,7,SR2,6,XW[5],6,XW[6],7,
        'HARIDASHIBU#HAIRYOKU#TEKKIN'); CRLF(1);
XX9:
        TYP0UT(2,'15',4,KMTA7,3,HHK,7,0.559,6,KMTA8/1000,
        6,KMTA9,7,'KUMITATE#TEKKIN'); CRLF(1);
        TYP0UT(2,'16',4,ANK1,3,ANK3,7,WI,6,ANK2/1000,
        6,ANK4,7,'ANKA-TEKKIN'); CRLF(2);
        SPACE(55); PRINTS('TOTAL###'); PRINTF(8,2,GOKEI);
        CRLF(2); PRINTS('#####CONCRETE#VOLUME#####');
        CRLF(2);
        for I=1 step 1 until 4 do
            begin
                PRINTS('No='); PRINTI(1,I);
                PRINTF(3,3,CON[I]); CRLF(1);
            end;
        CRLF(1); PRINTS('#TOTAL='); PRINTF(3,3,CON[5]);
        PRINTS('m3'); CRLF(2);
        PRINTS('#####KATAWAKU#AREA#####'); CRLF(2);
        for I=1 step 1 until 10 do
            begin
                PRINTS('No='); PRINTI(2,I);
                PRINTF(5.4,KAT[I]); CRLF(1);
            end;
        CRLF(1); PRINTS('#TOTAL='); PRINTF(5.4,KAT[11]);
        PRINTS('m2'); CRLF(2);
        PRINTS('#####HONSEN#HOSO##VOLUME=');
        PRINTF(2.3,SAD); PRINTS('m3'); CRLF(2);
        PRINTS('#####HODO##HOSO##VOLUME=');
        PRINTF(2.3,FAD); PRINTS('m3'); CRLF(2);
        go to START;
    END;
end;

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begin
external PREADY,PSENX,PMOVE,POUTI,PENX,POUTF;
real SKEW,SIZE,T1,T2,T3,T4,T5,T6,T7,T8,T9,T10,T11,T12,
    T13,T14,T15,T16,T17,T19,T20,T21,T22,T23,T24;
integer NN;
array XX,YY,H,W[1:15];
procedure P(A,B);
    value A,B; real A,B;
    PSENX(A,B);
procedure PM(A,B);
    value A,B; real A,B;
    PMOVE(A,B);
procedure HG(X,Y,S,A);
    value X,Y,S,A; real X,Y,S; integer A;
    begin
        integer B,M,N;
        B=A; PM(X,Y);
        M:=if S=1 then 2 else if S=2 then 4 else
            if S=4 then 6 else 16;
        N:=if B<10 then 1 else if B<100 then 2 else
            if B<1000 then 3 else if B<10000 then 4 else
            if B<100000 then 5 else 6;
        POUTI(0,M,N,B);
    end;
procedure D(X,Y,S);
    value X,Y,S; real X,Y,S;
    begin real SS;
        SS:=if S=1 then 0,2 else if S=2 then 0,4 else
            if S=4 then 0,6 else 2;
        PM(X,Y); P(X,Y+10*SS); P(X+3*SS,Y+10*SS);
        P(X+5*SS,Y+8*SS);
        P(X+5*SS,Y+2*SS); P(X+3*SS,Y); P(X,Y);
    end;
procedure EX(X,Y,S);
    value X,Y,S; real X,Y,S;
    begin
        real SS;
        SS:=if S=1 then 0,3 else if S=2 then 0,6 else
            if S=4 then 1,2 else 2,5;
        PM(X+1*SS,Y); P(X+4*SS,Y+5*SS); PM(X+1*SS,Y+5*SS);
        P(X+4*SS,Y);
    end;
procedure EENN(X,Y,S,A);
    value X,Y,S,A; real X,Y,S,A;
    begin
        PM(X,Y); PENX(X,Y,1,5*S);
        if A<10 then HG(X-(3*S),Y-(1*S),S,A) else
            HG(X-(3,6*S),Y-(1*S),S,A);
    end;
procedure VG(X,Y,S,A);
    value X,Y,S,A; real X,Y,S; integer A;
    begin integer B,N,M;
        B=A; PM(X,Y);
        M:=if S=1 then 2 else if S=2 then 4 else
            if S=4 then 6 else 8;
        N:=if B<10 then 1 else if B<100 then 2 else
            if B<1000 then 3 else if B<10000 then 4 else
            if B<100000 then 5 else 6;
        POUTI(270,0,M,N,B);
    end;
procedure AG(X,Y,M,A,S);
    value X,Y,M,A,S; real X,Y,M,S; integer A;
    begin integer B,N; real AN,H;
        B=A; AN=S; PM(X,Y);
        H:=if M=1 then 2 else if M=2 then 4 else
            if S=4 then 6 else 8;
        N:=if B<10 then 1 else if B<100 then 2 else
            if B<1000 then 3 else if B<10000 then 4 else
            if B<100000 then 5 else 6;
        POUTI(AN,H,N,B);
    end;

```

```

procedure XY(L,A,X1,Y1,X2,Y2);
value L,A,X1,Y1;
real L,A,X1,Y1,X2,Y2;
begin
if A≥360 v A≤-360 then A=A-(A÷360)*360;
if A>180 v A<-180 then A=A-(A÷180)*360;
if A≥-90 ^ A≤90 then
begin
X2=X1+L*COS(A*3.1415926/180);
Y2=Y1+L*SIN(A*3.1415926/180);
end;
if A>90 then
begin
X2=X1-L*COS((180-A)*3.1415926/180);
Y2=Y1+L*SIN((180-A)*3.1415926/180);
end;
if A<-90 then
begin
X2=X1-L*COS((180+A)*3.1415926/180);
Y2=Y1-L*SIN((180+A)*3.1415926/180);
end;
end;
procedure YASEN(S,X1,Y1,X2,Y2);
value S,X1,Y1,X2,Y2;
real S,X1,Y1,X2,Y2;
begin
real X,Y,X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,A1,A2,AA,AT,L;
L:=SQRT((X2-X1)2+(Y2-Y1)2);
AT:=180/3.1415926;
if X2=X1 ^ Y2=Y1 then go to LL1;
if X2≠X1 ^ Y2≠Y1 then AA:=(Y2-Y1)/(X2-X1);
A:=(if X2=X1 then 90 else if Y2=Y1 then 0 else
AT*ARCTAN(AA));
if X2=X1 then
begin
if Y2>Y1 then
begin
A1:=A; A2:=-A;
end else
begin
A1:=-A; A2:=A;
end;
end;
if X2>X1 then
begin
A1:=A; A2:=A+180;
end;
if X2<X1 then
begin
A1:=A+180; A2:=A;
end;
if L>4*S then
begin
XY(1.5*S,A1,X1,Y1,X,Y); XY(0.3*S,A1+90,X,Y,X3,Y3);
XY(0.3*S,A1-90,X,Y,X4,Y4); XY(1.5*S,A2,X2,Y2,X,Y);
XY(0.3*S,A2+90,X,Y,X5,Y5); XY(0.3*S,A2-90,X,Y,X6,Y6);
PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1);
P(X2,Y2);
P(X5,Y5); P(X6,Y6); P(X2,Y2);
end;
if L≤4*S then
begin
XY(1.5*S,A2,X1,Y1,X,Y); XY(0.3*S,A2+90,X,Y,X3,Y3);
XY(0.3*S,A2-90,X,Y,X4,Y4); XY(1.5*S,A1,X2,Y2,X,Y);
XY(0.3*S,A1+90,X,Y,X5,Y5); XY(0.3*S,A1-90,X,Y,X6,Y6);
PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1);
XY(3*S,A2,X1,Y1,X,Y); P(X,Y);
XY(3*S,A1,X2,Y2,X,Y); PM(X,Y); P(X2,Y2); P(X5,Y5);
P(X6,Y6); P(X2,Y2);
end;
LL1:
end;

```

```

Procedure DSEN(X1,Y1,X2,Y2);
value X1,Y1,X2,Y2;
real X1,Y1,X2,Y2;
begin
  real X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,AA,AT;
  if X2=X1 ^ Y2=Y1 then go to LL2;

  if X2=X1 ^ Y2<Y1 then
  begin
    X3=X1+0.1; Y3=Y1; X4=X1-0.1; Y4=Y1;
    X5=X2+0.1; Y5=Y2; X6=X2-0.1; Y6=Y2;
  end;
  if X2<X1 ^ Y2=Y1 then
  begin
    X3=X1; Y3=Y1+0.1; X4=X1; Y4=Y1-0.1;
    X5=X2; Y5=Y2+0.1; X6=X2; Y6=Y2-0.1;
  end;
  if X2<X1 ^ Y2<Y1 then
  begin
    AA=(Y2-Y1)/(X2-X1); AT=180/3.1415926; A=AT*ARCTAN(AA);
    XY(0.1,A+90,X1,Y1,X3,Y3); XY(0.1,A-90,X1,Y1,X4,Y4);
    XY(0.1,A+90,X2,Y2,X5,Y5); XY(0.1,A-90,X2,Y2,X6,Y6);
  end;
  PM(X1,Y1); P(X3,Y3); P(X5,Y5); P(X6,Y6);
  P(X4,Y4); P(X1,Y1); P(X2,Y2);
  LL2 :
end;

procedure TETU(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
    begin PUP; PFP; end;
  procedure DF;
    begin PDP; PFP; end;
  procedure PN(X,Y);
    value X,Y; real X,Y;
    begin real AA,BB;
      AA=S/10*(X*COS(D)+Y*SIN(D));
      BB=S/10*(-X*SIN(D)+Y*COS(D));
      PNP(AA,BB);
    end;
  real D,PXXX,PYYY;
  D:=3.1415926536/180*A;
  XYM(1,PXXX,PYYY);
  DF; PN(0,0); PN(4,0); UF; PN(4,0); PN(3,0);
  DF; PN(3,0); PN(3,4); UF; PN(3,4); PN(1,4);
  DF; PN(1,4); PN(1,0); UF; PN(1,0); PN(2,0);
  DF; PN(2,0); PN(2,8); UF; PN(2,8); PN(1,8);
  DF; PN(1,8); PN(3,8); UF; PN(3,8); PN(3,6);
  DF; PN(3,6); PN(1,6); UF; PN(1,6); PN(0,7);
  DF; PN(0,7); PN(1,5,10); PN(3,10); PN(4,7);
  UF; PN(4,7); PN(5,6); DF; PN(5,6); PN(5,5,7); PN(5,5,10);
  UF; PN(5,5,10); PN(5,5,9); DF; PN(5,5,9); PN(10,9);
  UF; PN(10,9); PN(10,7); DF; PN(10,7); PN(5,5,7);
  UF; PN(5,5,7); PN(7,5,10); DF; PN(7,5,10); PN(7,5,5); PN(5,0);
  UF; PN(5,0); PN(7,5,5); DF; PN(7,5,5); PN(10,0);
  PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;

procedure KIN(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
    begin PUP; PFP; end;
  procedure DF;
    begin PDP; PFP; end;
  procedure PN(X,Y);
    value X,Y; real X,Y;

```

```

begin real AA,BB;
  AA:=S/10*(X*COS(D)+Y*SIN(D));
  BB:=S/10*(-X*SIN(D)+Y*COS(D));
  PNP(AA,BB);
end;
real D,PXXX,PYYY;
D:=3.1415926536/180*A;
XYM(1,PXXX,PYYY);
DF: PN(0,0); PN(0,5,2); PN(0,5,7); PN(4,7); PN(4,0);
UF: PN(4,0); PN(4,4); DF: PN(4,4); PN(0,5,4);
UF: PN(0,5,4); PN(0,5,5,5); DF: PN(0,5,5,5); PN(4,5,5);
UF: PN(4,5,5); PN(3,7); DF: PN(3,7); PN(2,9);
UF: PN(2,9); PN(1,10); DF: PN(1,10); PN(0,8);
UF: PN(0,8); PN(0,5,9); DF: PN(0,5,9); PN(4,9);
UF: PN(4,9); PN(6,10); DF: PN(6,10); PN(5,8);
UF: PN(5,8); PN(5,5,9); DF: PN(5,5,9); PN(9,9);
UF: PN(9,9); PN(8,9); DF: PN(8,9); PN(7,7);
UF: PN(7,7); PN(8,7); DF: PN(8,7); PN(5,0);
UF: PN(5,0); PN(5,6); DF: PN(5,6); PN(10,6); PN(10,0);
PXXX:=PXXX+S*COS(-D); PYYY:=PYYY+S*SIN(-D);
XYM(0,PXXX,PYYY);
end;
procedure KA(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
    begin PUP; PFP; end;
  procedure DF;
    begin PDP; PFP; end;
  procedure PN(X,Y);
    value X,Y; real X,Y;
    begin real AA,BB;
      AA:=S/10*(X*COS(D)+Y*SIN(D));
      BB:=S/10*(-X*SIN(D)+Y*COS(D));
      PNP(AA,BB);
    end;
  real D,PXXX,PYYY;
  D:=3.1415926536/180*A;
  XYM(1,PXXX,PYYY);

  UF: PN(0,0); PN(1,0); DF: PN(1,0); PN(2,10);
  UF: PN(2,10); PN(0,8); DF: PN(0,8); PN(4,8);
  PN(4,0); PN(3,1);
  UF: PN(3,1); PN(10,0);
  DF: PN(10,0); PN(6,0); PN(6,10); PN(10,10); PN(10,0);
  PXXX:=PXXX+S*COS(-D); PYYY:=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;
procedure KNU1(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
    begin PUP; PFP; end;
  procedure DF;
    begin PDP; PFP; end;
  procedure PN(X,Y);
    value X,Y; real X,Y;
    begin real AA,BB;
      AA:=S/10*(X*COS(D)+Y*SIN(D));
      BB:=S/10*(-X*SIN(D)+Y*COS(D));
      PNP(AA,BB);
    end;
  real D,PXXX,PYYY;
  XYM(1,PXXX,PYYY);
  D:=3.1415926536/180*A;
  UF: PN(0,0); PN(5,0); DF: PN(5,0); PN(5,10);
  UF: PN(5,10); PN(9,10); DF: PN(9,10); PN(1,10);
  UF: PN(1,10); PN(1,0); DF: PN(1,0); PN(9,0);
  UF: PN(9,0); PN(10,0);
  PXXX:=PXXX+S*COS(-D); PYYY:=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;

```

```

procedure ZU(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
  begin PUP; PFP; end;
  procedure DF;
  begin PDP; PFP; end;
  procedure PN(X,Y);
  value X,Y; real X,Y;
  begin real AA,BB;
    AA=S/10*(X*COS(D)+Y*SIN(D));
    BB=S/10*(-X*SIN(D)+Y*COS(D));
    PNP(AA,BB);
  end;
  real D,PXXX,PYYY;
  D:=3.1415926536/180*A;
  XYM(1,PXXX,PYYY);
  DF; PN(0,0); PN(0,10); PN(10,D); PN(10,0); PN(0,0);
  UF; PN(0,0); PN(2,1); DF; PN(2,1); PN(8,7);
  UF; PN(8,7); PN(8,1); DF; PN(8,1); PN(1,4);
  UF; PN(1,4); PN(2,5); DF; PN(2,5); PN(2,9);
  UF; PN(2,9); PN(4,9); DF; PN(4,9); PN(4,5);
  UF; PN(4,5); PN(10,0);
  PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;

procedure HYOU1(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
  begin PUP; PFP; end;
  procedure DF;
  begin PDP; PFP; end;
  procedure PN(X,Y);
  value X,Y; real X,Y;
  begin real AA,BB;
    AA=S/10*(X*COS(D)+Y*SIN(D));
    BB=S/10*(-X*SIN(D)+Y*COS(D));
    PNP(AA,BB);
  end;
  real D,PXXX,PYYY;
  XYM(1,PXXX,PYYY);
  D:=3.1415926536/180*A;
  UF; PN(0,0); PN(1,6); DF; PN(1,6); PN(9,6);
  UF; PN(9,6); PN(9,7.5); DF; PN(9,7.5); PN(1,7.5);
  UF; PN(1,7.5); PN(1,9); DF; PN(1,9); PN(9,9);
  UF; PN(9,9); PN(5,10); DF; PN(5,10); PN(5,6);
  UF; PN(5,6); PN(4,6); DF; PN(4,6); PN(1,3);
  UF; PN(1,3); PN(2,4); DF; PN(2,4); PN(2,0); PN(3,1);
  UF; PN(3,1); PN(8,5); DF; PN(8,5); PN(5,3);
  UF; PN(5,3); PN(4,4); DF; PN(4,4); PN(7,1); PN(9,0);
  UF; PN(9,0); PN(10,0);
  PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;

procedure TEKKZ(A,S,X,Y);
value A,S,X,Y; real A,S,X,Y;
begin real SS;
  SS:=if S=1 then 5 else if S=2 then 10 else 20;
  PN(X,Y);
  TETU(A,SS);
  PM(X+6*S,Y);
  KIN(A,SS);
  PM(X+12*S,Y);
  KA(A,SS);
  PM(X+18*S,Y);
  KOU1(A,SS);
  PM(X+24*S,Y);
end;

```

```

    ZU(A,SS);
end;
procedure TKHY(A,S,X,Y);
    value A,S,X,Y; real A,S,X,Y;
begin real SS;
    SS:=if S=1 then 3,5 else if S=2 then 7,0 else 14,0;
    PM(X,Y);
    TETU(A,SS);
    PM(X+4,5*S,Y);
    KIN(A,SS);
    PM(X+9*S,Y);
    HYQU1(A,SS);
end;
procedure KAKOZU(S,L,K1,K2,K3,K4,K5,K6,K7,K8,K9,K10,K11,K12,K13,
    K14,K15,K16,K17,K19,K20,K21,K22,K23,K24,N0);
    value S,L,K1,K2,K3,K4,K5,K6,K7,K8,K9,K10,K11,K12,K13,
    K14,K15,K16,K17,K19,K20,K21,K22,K23,K24;
    real S,L,K1,K2,K3,K4,K5,K6,K7,K8,K9,K10,K11,K12,K13,
    K14,K15,K16,K17,K19,K20,K21,K22,K23,K24;
    array N0;
begin real KK;
    procedure MARU(K);
        real K;
        begin integer KE,K1,K2;
            KE=K÷10; K1=KE÷10*10; K2=KE-K1;
            K1=(K2+4)÷5*5+K1; K=K1*10;
        end;
        K5=K5-(K3+K4)*2;
        K7=K7-(K3+K4)*2;
        K13=K13+15;
        K17=K17-85;
        if K2÷K2÷50*50 then MARU(K2);
        N0[1]=K2;
        MARU(K3); MARU(K4); MARU(K5);
        KK=K3*2+K4*2+K5;
        N0[2]=KK;
        if S=90 then go to TQ1;
        if K6÷K6÷50*50 then MARU(K6);
        N0[3]=K6;
        MARU(K7);
        KK=K3*2+K4*2+K7;
        N0[4]=KK;
        if K9÷K9÷50*50 then MARU(K9);
        N0[5]=K9;
    TQ1:
        if K11÷K11÷50*50 then MARU(K11);
        N0[6]=K11;
        if S=90 then go to TQ;
        if K15÷K15÷50*50 then MARU(K15);
        N0[7]=K15;
    TQ:
        if K19÷K19÷50*50 then MARU(K19);
        N0[8]=K19;
        MARU(K12);
        MARU(K13);
        KK=K12+K13*2+100*2;
        N0[9]=KK;
        if S=90 then go to TQQ;
        MARU(K21);
        N0[10]=K21; N0[11]=K21;
    TQQ:
        MARU(K17);
        KK=K17+K16*2;
        N0[12]=KK;
        K23=K23/2; K23=K23+500;
        MARU(K23);
        KK=K23+K22*2;
        N0[13]=KK;

```

PM(25*L,72*L); P(60*L,72*L); TEKKZ(0,L,28*L,72,3*L);
 DSEN(0,66*L,70*L,66*L); EENN(30*L,68*L,L,1);
 D(32*L,66,5*L,L); HG(33*L,66,5*L,L,K1);
 EX(36*L,66,5*L,L); HG(37*L,66,5*L,L,NO[1]);
 DSEN(0,57*L,8*L,57*L); DSEN(8*L,57*L,12*L,53*L);
 DSEN(12*L,53*L,58*L,53*L);
 DSEN(58*L,53*L,62*L,57*L); DSEN(62*L,57*L,70*L,57*L);
 PM(0,57*L); P(0,60*L); YASEN(L,0,59,5*L,8*L,59,5*L);
 PM(8*L,60*L); P(8*L,57*L); P(10*L,58,5*L);
 YASEN(L,9,6*L,58,2*L,13,5*L,54,5*L);
 PM(14*L,54,8*L); P(12*L,53*L); P(12*L,47,5*L);
 YASEN(L,12*L,48*L,58*L,48*L); PM(58*L,47,5*L);
 P(58*L,53*L); EENN(30*L,55*L,L,2); D(32*L,53,5*L,L);
 HG(33*L,53,5*L,L,K1); EX(36*L,53,5*L,L);
 HG(37*L,53,5*L,L,NO[2]); HG(2*L,60*L,L,K3);
 AG(10*L,58,5*L,L,K4,45); HG(30*L,48,5*L,L,K5);

if S=90 then go to TT1;
 DSEN(0,40*L,80*L,40*L); EENN(30*L,42*L,L,3);
 D(32*L,40,5*L,L); HG(33*L,40,5*L,L,K1);
 EX(36*L,40,5*L,L); HG(37*L,40,5*L,L,NO[3]);
 DSEN(0,31*L,8*L,31*L); DSEN(8*L,31*L,12*L,27*L);
 DSEN(12*L,27*L,68*L,27*L);
 DSEN(68*L,27*L,72*L,31*L); DSEN(72*L,31*L,80*L,31*L);
 PM(0,31*L); P(0,34*L); YASEN(L,0,33,5*L,8*L,33,5*L);
 PM(8*L,34*L); P(8*L,31*L); P(10*L,32,5*L);
 YASEN(L,9,6*L,32,2*L,13,5*L,28,5*L); PM(14*L,28,8*L);
 P(12*L,27*L); P(12*L,21,5*L);
 YASEN(L,12*L,22*L,68*L,22*L); PM(68*L,21,5*L);
 P(68*L,27*L); HG(2*L,34*L,L,K3); AG(10*L,32,5*L,L,K4,45);
 EENN(30*L,29*L,L,4); D(32*L,27,5*L,L);
 HG(33*L,27,5*L,L,K1); EX(36*L,27,5*L,L);
 HG(37*L,27,5*L,L,NO[4]); HG(30*L,22,5*L,L,K7);

TT1:

DSEN(0,15*L,130*L,15*L); EENN(30*L,17*L,L,5);
 D(32*L,15,5*L,L); HG(33*L,15,5*L,L,K8);
 EX(36*L,15,5*L,L); HG(37*L,15,5*L,L,NO[5]);
 DSEN(0,7*L,70*L,7*L); EENN(30*L,9*L,L,6);
 D(32*L,7,5*L,L); HG(33*L,7,5*L,L,K10);
 EX(36*L,7,5*L,L); HG(37*L,7,5*L,L,NO[6]);
 if S=90 then go to TX;
 DSEN(0,0,80*L,0); EENN(30*L,2*L,L,7); D(32*L,0,5*L,L);
 HG(33*L,0,5*L,L,K10);
 EX(36*L,0,5*L,L); HG(37*L,0,5*L,L,NO[7]);

TX:

DSEN(90*L,66*L,170*L,66*L); EENN(110*L,68*L,L,8);
 D(112*L,66,5*L,L); HG(113*L,66,5*L,L,13);
 EX(116*L,66,5*L,L); HG(117*L,66,5*L,L,NO[8]);
 DSEN(101,5*L,47*L,100*L,47*L); DSEN(100*L,47*L,100*L,55*L);
 DSEN(100*L,55*L,104*L,55*L); DSEN(104*L,55*L,104*L,47*L);
 DSEN(104*L,47*L,102,5*L,47*L);
 PM(100*L,55*L); P(100*L,58*L);
 YASEN(L,100*L,57,5*L,104*L,57,5*L);
 PM(104*L,58*L); P(104*L,55*L); P(107*L,55*L);
 YASEN(L,106,5*L,55*L,106,5*L,47*L);
 PM(107*L,47*L); P(104*L,47*L); PM(100*L,47*L);
 P(100*L,45*L); YASEN(L,100*L,45,5*L,101,5*L,45,5*L);
 PM(101,5*L,45*L); P(101,5*L,47*L);
 HG(99*L,58*L,L,K12); VG(109*L,48*L,L,K13);
 HG(98*L,42,5*L,L,K14); EENN(95*L,39*L,L,9);
 D(97*L,38*L,L); HG(98*L,38*L,L,13); EX(101*L,38*L,L);
 HG(102*L,38*L,L,NO[9]);

if S=90 then go to TT2;
 DSEN(120*L,40*L,160*L,40*L); EENN(130*L,42*L,L,10);
 EENN(134*L,42*L,L,11);

```

D(136*L,40.5*L,L); HG(137*L,40.5*L,L,K20);
EX(140*L,40.5*L,L); HG(141*L,40.5*L,L,N0(10));
TT2:
DSEN(101.5*L,22*L,100*L,22*L); DSEN(100*L,22*L,100*L,28*L);
DSEN(100*L,28*L,101.5*L,28*L); PM(101.5*L,28*L);
P(101.5*L,30*L); YASEN(L,101.5*L,29.5*L,100*L,29.5*L);
PM(100*L,30*L); P(100*L,28*L); P(97*L,28*L);
YASEN(L,97.5*L,28*L,97.5*L,22*L);
PM(97*L,22*L); P(100*L,22*L);
HG(98*L,30*L,L,K16); VG(97*L,23*L,L,K17);
EENN(95*L,19*L,L,12); D(97*L,18*L,L); HG(98*L,18*L,L,10);
EX(101*L,18*L,L); HG(102*L,18*L,L,N0(12));
DSEN(152.5*L,22*L,150*L,22*L); DSEN(150*L,22*L,150*L,33*L);

DSEN(150*L,33*L,152.5*L,33*L); PM(150*L,22*L);
P(147*L,22*L); YASEN(L,147.5*L,22*L,147.5*L,33*L);
PM(147*L,33*L); P(150*L,33*L);
PM(150*L,33*L); P(150*L,35*L);
YASEN(L,150*L,34.5*L,152.5*L,34.5*L);
PM(152.5*L,35*L); P(152.5*L,33*L); HG(149*L,35*L,L,K22);
VG(147*L,24*L,L,K23); EENN(145*L,19.5*L,L,13);
D(147*L,18.5*L,L); HG(148*L,18.5*L,L,K24);
EX(151*L,18.5*L,L); HG(152*L,18.5*L,L,N0(13));

PRINTS('KAKOZU**OWARI'); CRLF(10);
end;
procedure ZAIRYO(X,Y,N,NN,XX,YY,H,W);
value X,Y,N; real X,Y,N; integer NN; array XX,YY,H,W;
begin integer I; real X1,X2,Y1,Y2,Y3,Y4,HX,HW;
  X1=X; Y1=Y;
  PM(X1,Y1);
  for I=0 step 5*N until 85*N do
    begin
      PM(X1,Y1-I); P(X1+100*N,Y1-I);
    end;
  Y2=Y1-70*N; Y3=Y1-85*N;
  TKHY(0,N,X1+5*N,Y1+1,0*N);
  PM(X1,Y1); P(X1,Y3); PM(X1+5*N,Y1); P(X1+5*N,Y2);
  PM(X1+15*N,Y1); P(X1+15*N,Y2);
  PM(X1+35*N,Y1); P(X1+35*N,Y2);
  PM(X1+45*N,Y1); P(X1+45*N,Y2); PM(X1+60*N,Y1);
  P(X1+60*N,Y2); PM(X1+75*N,Y1); P(X1+75*N,Y2);
  PM(X1+90*N,Y1); P(X1+90*N,Y2); PM(X1+100*N,Y1);
  P(X1+100*N,Y3);
  PM(X1,Y1); X2=X1+4*N; Y4=2*N;
  EENN(X2,Y1+Y4-10*N,N,1); EENN(X2,Y1+Y4-15*N,N,2);
  EENN(X2,Y1+Y4-20*N,N,3); EENN(X2,Y1+Y4-25*N,N,4);
  EENN(X2,Y1+Y4-30*N,N,5); EENN(X2,Y1+Y4-35*N,N,6);
  EENN(X2,Y1+Y4-40*N,N,7); EENN(X2,Y1+Y4-45*N,N,8);
  EENN(X2,Y1+Y4-50*N,N,9); EENN(X2,Y1+Y4-55*N,N,10);
  EENN(X2,Y1+Y4-60*N,N,11); EENN(X2,Y1+Y4-65*N,N,12);
  EENN(X2,Y1+Y4-70*N,N,13);
  HX=-5; HW=0;
  PM(X1,Y1);
  for I=1 step 1 until NN do
    begin
      D(X1+6*N,Y1+(-4,6+HX)*N,2*N);
      HG(X1+8*N,Y1+(-4,8+HX)*N,2*N,XX(I));
      PH(X1+20*N,Y1+(-4,8+HX)*N); POUTI(0,N*3,5,YY(I));
      PH(X1+36*N,Y1+(-4,8+HX)*N); POUTI(0,N*3,3,H(I));
      PH(X1+48*N,Y1+(-4,8+HX)*N); POUTF(0,N*3,1,3,W(I));
      PM(X1+62*N,Y1+(-4,8+HX)*N);
      POUTF(0,N*3,2,3,(YY(I)/1000)*W(I));
      PH(X1+77*N,Y1+(-4,8+HX)*N);
    end;
end;

```

```

      POUTF(0,N*3,4.2,(YY[I]/1000)*W[I]*H[I]);
      HX=HX-5; HW=HW+(YY[I]/1000)*W[I]*H[I];
    end;
    PM(X1+77*N,Y1+(HX-4.8)*N); POUTF(0,N*3,4.4,HW/1000);
  end;
  READ(SKEW); if SKEW=0 then go to OWARI;
  READ(SIZE,T1,T2,T3,T4,T5,T6,T7,T8,T9,T10,T11,T12,T13,
    T14,T15,T16,T17,T19,T20,T21,T22,T23,T24);
  READ(NN); READARRAY(XX,1,NN);
  READARRAY(H,1,NN); READARRAY(W,1,NN);
  PMOVE(190*SIZE,100*SIZE); PREADY(0,0);
  KAKOZU(SKEW,SIZE,T1,T2,T3,T4,T5,T6,T7,T8,T9,T10,T11,T12,
    T13,T14,T15,T16,T17,T19,T20,T21,T22,T23,T24,YY);
  PMOVE(-190*SIZE,-100*SIZE);
  PREADY(0,0); ZAIRYO(265*SIZE,90*SIZE,SIZE,NN,XX,YY,H,W);
  PREADY(0,0); PMOVE(-265*SIZE,-90*SIZE); PREADY(0,0);
  PRINTS('***ZAIRYO**OWARI'); CRLF(10);
OWARI;
end;

```

```

begin
external PREADY,PSENX,PMOVE,POUTI,PENX;
real SP,SPP,FU,ZFU,SKEW,MA,HA,YA,Y,D,S1,S2,S3,S4,SS1,SS2,SS3,SS4,
K1,K2,K3,K4,KK1,KK2,KK3,KK4,Y1,Y2,Y3,Y4,SIZE;
procedure DANMENZU(L,LL,W,WL,S,MAS,HHAS,YAS,YL,D,SSY1,SSY2,SSY3,
SSY4,SY1,SY2,SY3,SY4,KM1,KM2,KM3,KM4,KMM1,
KMM2,KMM3,KMM4,YE1,YE2,YE3,YE4,N);
value L,LL,W,WL,S,MAS,HHAS,YAS,YL,D,SSY1,SSY2,SSY3,SSY4,SY1,
SY2,SY3,SY4,KM1,KM2,KM3,KM4,KMM1,KMM2,KMM3,KMM4,YE1,
YE2,YE3,YE4,N;
real L,LL,W,WL,S,MAS,HHAS,YAS,YL,D,SSY1,SSY2,SSY3,SSY4,SY1,
SY2,SY3,SY4,KM1,KM2,KM3,KM4,KMM1,KMM2,KMM3,KMM4,YE1,
YE2,YE3,YE4,N;

begin
real YOU,W2,A,LL1,H,K,K1,D1,DD1,L1,YL1,T,T1,C,WW,WHL,W5,W1,
F1,SN01,SN02,SN03,S11,S22,S33,S44,S55,SY1,SY2,SY3,SY4,
SY5,SY6,SY7,SY8,SY9,SY10,SY11,SY12;
procedure P(A,B);
value A,B; real A,B;
PSENX(A,B);
procedure PH(A,B);
value A,B; real A,B;
PMOVE(A,B);
procedure VG(X,Y,S,A);
value X,Y,S,A; real X,Y,S; integer A;
begin integer B,N,M;
B:=A; PH(X,Y);
N:=if B<10 then 1 else if B<100 then 2 else if B<1000 then 3
else if B<10000 then 4 else if B<100000 then 5 else 6;
M:=if S=1 then 2 else if S=2 then 4 else if S=4 then 6 else 8;
POUTI(270,0,M,N,B);
end;
procedure HG(X,Y,S,A);
value X,Y,S,A; real X,Y,S; integer A;
begin integer B,N,M;
B:=A; PH(X,Y);
N:=if B<10 then 1 else if B<100 then 2 else if B<1000 then 3 else
if B<10000 then 4 else if B<100000 then 5 else 6;
M:=if S=1 then 2 else if S=2 then 4 else if S=4 then 6 else 8;
POUTI(0,M,N,B);
end;
procedure EENN(X,Y,S,A);
value X,Y,S,A; real X,Y,S,A;
begin
PM(X,Y); PENX(X,Y,1.5*S);
if A<10 then HG(X-(3*S),Y-(1*S),S,A) else
HG(X-(3.6*S),Y-(1*S),S,A);
end;
procedure XY(L,A,X1,Y1,X2,Y2);
value L,A,X1,Y1;
real L,A,X1,Y1,X2,Y2;
begin
if A≥360 v A≤-360 then A:=A-(A≥360)*360;
if A>180 v A<-180 then A:=A-(A>180)*360;
if A≥-90 ^ A≤90 then
begin
X2:=X1+L*COS(A*3.1415926/180);
Y2:=Y1+L*SIN(A*3.1415926/180);
end;
if A>90 then
begin
X2:=X1-L*COS((180-A)*3.1415926/180);
Y2:=Y1+L*SIN((180-A)*3.1415926/180);
end;
if A<-90 then
begin
X2:=X1-L*COS((180+A)*3.1415926/180);
Y2:=Y1-L*SIN((180+A)*3.1415926/180);
end;
end;
end;

```

```

procedure YASEN(S,X1,Y1,X2,Y2);
value S,X1,Y1,X2,Y2;
real S,X1,Y1,X2,Y2;
begin
  real X,Y,X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,A1,A2,AA,AT,L;
  L:=SQRT((X2-X1)*2+(Y2-Y1)*2);
  AT:=180/3.1415926;
  if X2=X1 ^ Y2=Y1 then go to LL1;
  if X2*X1 ^ Y2*Y1 then AA:=(Y2-Y1)/(X2-X1);
  A:=(if X2=X1 then 90 else if Y2=Y1 then 0 else AT*ARCTAN(AA));
  if X2=X1 then
    begin
      if Y2>Y1 then
        begin
          A1:=A; A2:=-A;
        end else
        begin
          A1:=-A; A2:=A;
        end;
      end;
    if X2>X1 then
      begin
        A1:=A; A2:=A+180;
      end;
    if X2<X1 then
      begin
        A1:=A+180; A2:=A;
      end;
    if L>4*S then
      begin
        XY(1,5*S,A1,X1,Y1,X,Y); XY(0,3*S,A1+90,X,Y,X3,Y3);
        XY(0,3*S,A1-90,X,Y,X4,Y4); XY(1,5*S,A2,X2,Y2,X,Y);
        XY(0,3*S,A2+90,X,Y,X5,Y5); XY(0,3*S,A2-90,X,Y,X6,Y6);
        PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1); P(X2,Y2);
        P(X5,Y5); P(X6,Y6); P(X2,Y2);
      end;
    if L<4*S then
      begin
        XY(1,5*S,A2,X1,Y1,X,Y); XY(0,3*S,A2+90,X,Y,X3,Y3);
        XY(0,3*S,A2-90,X,Y,X4,Y4); XY(1,5*S,A1,X2,Y2,X,Y);
        XY(0,3*S,A1+90,X,Y,X5,Y5); XY(0,3*S,A1-90,X,Y,X6,Y6);
        PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1);
        XY(3*S,A2,X1,Y1,X,Y); P(X,Y);
        XY(3*S,A1,X2,Y2,X,Y); PM(X,Y); P(X2,Y2); P(X5,Y5);
        P(X6,Y6); P(X2,Y2);
      end;
    LL1:
  end;
procedure DSEN(X1,Y1,X2,Y2);
value X1,Y1,X2,Y2;
real X1,Y1,X2,Y2;
begin
  real X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,AA,AT;
  if X2=X1 ^ Y2=Y1 then go to LL2;
  if X2=X1 ^ Y2*Y1 then
    begin
      X3=X1+0,1; Y3=Y1; X4=X1-0,1; Y4=Y1;
      X5=X2+0,1; Y5=Y2; X6=X2-0,1; Y6=Y2;
    end;
  if X2*X1 ^ Y2=Y1 then
    begin
      X3=X1; Y3=Y1+0,1; X4=X1; Y4=Y1-0,1;
      X5=X2; Y5=Y2+0,1; X6=X2; Y6=Y2-0,1;
    end;
  if X2*X1 ^ Y2*Y1 then
    begin
      AA:=(Y2-Y1)/(X2-X1); AT:=180/3.1415926; A=AT*ARCTAN(AA);
      XY(0,1,A+90,X1,Y1,X3,Y3); XY(0,1,A-90,X1,Y1,X4,Y4);
      XY(0,1,A+90,X2,Y2,X5,Y5); XY(0,1,A-90,X2,Y2,X6,Y6);
    end;
  PM(X1,Y1); P(X3,Y3); P(X5,Y5); P(X6,Y6);
  P(X4,Y4); P(X1,Y1); P(X2,Y2);
  LL2:
end;

```

```

Procedure KOSEN(X1,Y1,X2,Y2);
value      X1,Y1,X2,Y2;
real       X1,Y1,X2,Y2;
begin
  real      X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,AA,AT;
  if X2=X1 ^ Y2=Y1 then go to LL2;
  if X2=X1 ^ Y2<Y1 then
    begin
      X3=X1+0,1; Y3=Y1; X4=X1-0,1; Y4=Y1;
      X5=X2+0,1; Y5=Y2; X6=X2-0,1; Y6=Y2;
    end;
  if X2<X1 ^ Y2=Y1 then
    begin
      X3=X1; Y3=Y1+0,1; X4=X1; Y4=Y1-0,1;
      X5=X2; Y5=Y2+0,1; X6=X2; Y6=Y2-0,1;
    end;
  if X2<X1 ^ Y2<Y1 then
    begin
      AA=(Y2-Y1)/(X2-X1); AT=180/3,1415926; A=AT*ARCTAN(AA);
      XY(0,1,A+90,X1,Y1,X3,Y3); XY(0,1,A-90,X1,Y1,X4,Y4);
      XY(0,1,A+90,X2,Y2,X5,Y5); XY(0,1,A-90,X2,Y2,X6,Y6);
    end;
  P(X1,Y1); P(X3,Y3); P(X5,Y5); P(X6,Y6);
  PM(X4,Y4); P(X1,Y1); P(X2,Y2);
  LL2:
end;

Procedure KYASEN(S,X1,Y1,X2,Y2);
value      S,X1,Y1,X2,Y2;
real       S,X1,Y1,X2,Y2;
begin
  real      X,Y,X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,A1,A2,AA,AT,L;
  L=SQRT((X2-X1)2+(Y2-Y1)2);
  AT=180/3,1415926;
  if X2=X1 ^ Y2=Y1 then go to LL1;
  if X2<X1 ^ Y2<Y1 then AA=(Y2-Y1)/(X2-X1);
  A=(if X2=X1 then 90 else if Y2=Y1 then 0 else AT*ARCTAN(AA));
  if X2=X1 then
    begin
      if Y2>Y1 then
        begin
          A1=A; A2=-A;
        end else
        begin
          A1=-A; A2=A;
        end;
    end;
  if X2>X1 then
    begin
      A1=A; A2=A+180;
    end;
  if X2<X1 then
    begin
      A1=A+180; A2=A;
    end;
  XY(1,5*S,A1,X1,Y1,X,Y); XY(0,3*S,A1+90,X,Y,X3,Y3);
  XY(0,3*S,A1-90,X,Y,X4,Y4); XY(1,5*S,A2,X2,Y2,X,Y);
  XY(0,3*S,A2+90,X,Y,X5,Y5); XY(0,3*S,A2-90,X,Y,X6,Y6);
  PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1); P(X2,Y2);
  LL1:
end;

Procedure AA(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
  SS=(if S=1 then 0.2 else if S=2 then 0.4 else if S=4 then
    1 else 2);
  PM(X,Y); P(X+2,5*SS,Y+10*SS); P(X+5*SS,Y+0);
  PM(X+3,75*SS,Y+5*SS); P(X+1,25*SS,Y+5*SS);
end;

```

```

procedure B(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else if
      S=4 then 1 else 2;
    PM(X,Y); P(X,Y+10*SS); P(X+3*SS,Y+10*SS);
    P(X+5*SS,Y+7,5*SS); P(X+3,5*SS,Y+5*SS);
    P(X,Y+5*SS); PM(X+3,5*SS,Y+5*SS); P(X+5*SS,Y+2,5*SS);
    P(X+3,5*SS,Y); P(X,Y);
  end;

procedure F(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+1*SS,Y+0); P(X+1*SS,Y+10*SS); PM(X+0,Y+10*SS);
    P(X+5*SS,Y+10*SS); PM(X+4*SS,Y+5*SS); P(X+1*SS,Y+5*SS);
  end;

procedure G(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+6*SS,Y+9*SS); P(X+5*SS,Y+10*SS);
    P(X+1*SS,Y+10*SS); P(X,Y+9*SS); P(X,Y+1*SS);
    P(X+1*SS,Y); P(X+5*SS,Y); P(X+6*SS,Y+1*SS);
    PM(X+6*SS,Y); P(X+6*SS,Y+5*SS); P(X+4*SS,Y+5*SS);
  end;

procedure TEN(X,Y);
  value X,Y; real X,Y;

  begin
    real C; integer I;
    for C=1 , -1 do
      begin
        PM(X,Y-0,3);
        P(X+0,2*C,Y-0,2); P(X+0,3*C,Y);
        P(X+0,2*C,Y+0,2); P(X,Y+0,3);
      end;
    end;

procedure BAR(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+0,Y+5*SS); P(X+10*SS,Y+5*SS);
  end;

procedure CL(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+3,5*SS,Y+10*SS); P(X,Y); P(X+5*SS,Y);
    P(X+5*SS,Y+1,5*SS); PM(X+5*SS,Y+6,5*SS);
    P(X+4*SS,Y+8*SS); P(X+1,5*SS,Y+8*SS);
    P(X,Y+6,5*SS); P(X,Y+3*SS); P(X+1,5*SS,Y+2*SS);
    P(X+4*SS,Y+2*SS); P(X+5*SS,Y+3,5*SS);
  end;

procedure XX(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin
    real SS;
    SS:=if S=1 then 0,3 else if S=2 then 0,6 else
      if S=4 then 1,2 else 2,5;
    PM(X+1*SS,Y); P(X+4*SS,Y+5*SS); PM(X+1*SS,Y+5*SS);
    P(X+4*SS,Y);
  end;

```

```

procedure EK(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0.2 else if S=2 then 0.4 else
      if S=4 then 1 else 2;
    PM(X+0.5*SS,Y+3*SS); P(X+5*SS,Y+3*SS);
    PM(X+0.5*SS,Y+7*SS); P(X+5*SS,Y+7*SS);
  end;
real procedure SIND(S);
  value S; real S;
  begin real PAI;
    PAI=3.14159265358;
    SIND=SIN(S*PAI/180);
  end;
real procedure COSND(S);
  value S; real S;
  begin real PAI;
    PAI=3.14159265358;
    COSND=COS(S*PAI/180);
  end;
real procedure TAND(S);
  value S; real S;
  begin real PAI;
    PAI=3.14159265358;
    TAND=(SIN(PAI*S/180))/(COS(PAI*S/180));
  end;

procedure DAN(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
      begin PUP; PFP; end;
    procedure DF;
      begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
    real D,PXXX,PYYY;
    D=3.1415926536/180*A;
    XYM(1,PXXX,PYYY);
    UF; PN(0,0); PN(0,10); DF; PN(0,10); PN(0,1); PN(5,1);
    UF; PN(5,1); PN(5,2); DF; PN(5,2); PN(3,6); PN(1,9);
    UF; PN(1,9); PN(3,9); DF; PN(3,9); PN(3,2);
    UF; PN(3,2); PN(1,2); DF; PN(1,2); PN(3,6); PN(5,9);
    UF; PN(5,9); PN(5,6); DF; PN(5,6); PN(1,6);
    UF; PN(1,6); PN(10,10); DF; PN(10,10); PN(6,9); PN(6,0);
    UF; PN(6,0); PN(8,0); DF; PN(8,0); PN(8,7);
    UF; PN(8,7); PN(6,7); DF; PN(6,7); PN(10,7);
    UF; PN(10,7); PN(10,0);
    PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
  end;
procedure MEN(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
      begin PUP; PFP; end;
    procedure DF;
      begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
  end;

```

```

real D,PXXX,PYYY;
D=3.1415926536/180*A;
XYM(1,PXXX,PYYY);
DF; PN(0,0); PN(0,8); PN(10,8); PN(10,0); PN(0,0);
UF; PN(0,0); PN(0,10); DF; PN(0,10); PN(10,10);
UF; PN(10,10); PN(5,10); DF; PN(5,10); PN(5,8);
UF; PN(5,8); PN(3,8); DF; PN(3,8); PN(3,0);
UF; PN(3,0); PN(7,0); DF; PN(7,0); PN(7,8);
UF; PN(7,8); PN(7,6); DF; PN(7,6); PN(3,6);
UF; PN(3,6); PN(3,4); DF; PN(3,4); PN(7,4);
UF; PN(7,4); PN(10,0);
PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
XYM(0,PXXX,PYYY);
end;

procedure ZU(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
    begin PUP; PFP; end;
  procedure DF;
    begin PDP; PFP; end;
  procedure PN(X,Y);
    value X,Y; real X,Y;
    begin real AA,BB;
      AA=S/10*(X*COS(D)+Y*SIN(D));
      BB=S/10*(-X*SIN(D)+Y*COS(D));
      PNP(AA,BB);
    end;
  real D,PXXX,PYYY;
  D=3.1415926536/180*A;
  XYM(1,PXXX,PYYY);
  DF; PN(0,0); PN(0,10); PN(10,10); PN(10,0); PN(0,0);
  UF; PN(0,0); PN(2,1); DF; PN(2,1); PN(8,7);
  UF; PN(8,7); PN(8,1); DF; PN(8,1); PN(1,4);
  UF; PN(1,4); PN(2,5); DF; PN(2,5); PN(2,9);
  UF; PN(2,9); PN(4,9); DF; PN(4,9); PN(4,5);
  UF; PN(4,5); PN(10,0);
  PXXX=PXXX+S*COS(-D);
  PYYY=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;

procedure SYUKU(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
  procedure UF;
    begin PUP; PFP; end;
  procedure DF;
    begin PDP; PFP; end;
  procedure PN(X,Y);
    value X,Y; real X,Y;
    begin real AA,BB;
      AA=S/10*(X*COS(D)+Y*SIN(D));
      BB=S/10*(-X*SIN(D)+Y*COS(D));
      PNP(AA,BB);
    end;
  real D,PXXX,PYYY;
  D=3.1415926536/180*A;
  XYM(1,PXXX,PYYY);
  DF; PN(0,0); PN(1,3); UF; PN(1,3); PN(2,4);
  DF; PN(2,4); PN(2,0); UF; PN(2,0); PN(4,0);
  DF; PN(4,0); PN(3,3); UF; PN(3,3); PN(3,5);
  DF; PN(3,5); PN(4,4); PN(0,4); PN(4,8);
  UF; PN(4,8); PN(2,5,6,5); DF; PN(2,5,6,5); PN(1,8);
  UF; PN(1,8); PN(2,7); DF; PN(2,7); PN(3,10);
  UF; PN(3,10); PN(7,5,10); DF; PN(7,5,10); PN(7,5,9);
  UF; PN(7,5,9); PN(5,7); DF; PN(5,7); PN(5,9);
  PN(10,9); PN(10,7);
  UF; PN(10,7); PN(9,5,8); DF; PN(9,5,8); PN(7,8);
  UF; PN(7,8); PN(8,8); DF; PN(8,8); PN(8,6);
  UF; PN(8,6); PN(10,4); DF; PN(10,4); PN(6,5,4);
  UF; PN(6,5,4); PN(5,4); DF; PN(5,4); PN(6,8);
  UF; PN(6,8); PN(5,5,5); DF; PN(5,5,5); PN(5,5,0);

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UF; PN(5,5,0); PN(10,0); DF; PN(10,0); PN(6,5,0);
  PN(6,5,6); PN(10,6); PN(10,0);
  PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
  XYM(0,PXXX,PYYY);
end;
procedure SHAKU(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
      begin PUP; PFP; end;
    procedure DF;
      begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
    real D,PXXX,PYYY;
    XYM(1,PXXX,PYYY);
    D:=3.1415926536/180*A;
    DF; PN(0,0); PN(1,2); PN(1,9); PN(9,9); PN(9,5); PN(1,5);
    UF; PN(1,5); PN(3,5); DF; PN(3,5); PN(5,2); PN(10,0);
    PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
  end;
procedure SQU1(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
      begin PUP; PFP; end;
    procedure DF;
      begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
    real D,PXXX,PYYY;
    D:=3.1415926536/180*A;
    XYM(1,PXXX,PYYY);
    DF; PN(0,0); PN(1,3); UF; PN(1,3); PN(2,4);
    DF; PN(2,4); PN(2,0); UF; PN(2,0); PN(4,0);
    DF; PN(4,0); PN(3,3); UF; PN(3,3); PN(3,5);
    DF; PN(3,5); PN(4,4); PN(0,4); PN(4,7);
    UF; PN(4,7); PN(2,5,6); DF; PN(2,5,6); PN(1,8);
    UF; PN(1,8); PN(1,5,7); DF; PN(1,5,7); PN(3,10);
    UF; PN(3,10); PN(5,8); DF; PN(5,8); PN(7,10);
    UF; PN(7,10); PN(8,10); DF; PN(8,10); PN(10,8);
    UF; PN(10,8); PN(7,5,9); DF; PN(7,5,9); PN(5,6);
    PN(9,6); PN(8,7);
    UF; PN(8,7); PN(9,4); DF; PN(9,4); PN(9,2);
    UF; PN(9,2); PN(8,4); DF; PN(8,4); PN(8,2);
    UF; PN(8,2); PN(5,0); DF; PN(5,0); PN(5,5,1); PN(5,5,5);
    UF; PN(5,5,5); PN(7,5); DF; PN(7,5); PN(7,0); PN(10,0);
    PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
  end;
procedure HUKU1(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
      begin PUP; PFP; end;
    procedure DF;
      begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
  end;

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    real D,PXXX,PYYY;
    D:=3.1415926536/180*A;
    XYM(1,PXXX,PYYY);
    UF; PN(0,0); PN(2,0); DF; PN(2,0); PN(2,10);
    UF; PN(2,10); PN(0,5); DF; PN(0,5); PN(0,8);
        PN(4,8); PN(4,5);
    UF; PN(4,5); PN(5,10); DF; PN(5,10); PN(10,10);
    UF; PN(10,10); PN(5,9);
    DF; PN(5,9); PN(9,5,9); PN(9,5,7); PN(5,5,7); PN(5,5,9);
    UF; PN(5,5,9); PN(7,5,6); DF; PN(7,5,6); PN(7,5,0);
    UF; PN(7,5,0); PN(5,3,5); DF; PN(5,3,5); PN(10,3,5);
    UF; PN(10,3,5); PN(10,0);
    DF; PN(10,0); PN(5,0); PN(5,6); PN(10,6); PN(10,0);
    PXXX:=PXXX+S*COS(-D); PYYY:=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
end;

procedure IN(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
        begin PUP; PFP; end;
    procedure DF;
        begin PDP; PFP; end;
    procedure PN(X,Y);
        value X,Y; real X,Y;
        begin real AA,BB;
            AA:=S/10*(X*COS(D)+Y*SIN(D));
            BB:=S/10*(-X*SIN(D)+Y*COS(D));
            PNP(AA,BB);
        end;
    real D,PXXX,PYYY;
    XYM(1,PXXX,PYYY);
    D:=3.1415926536/180*A;
    UF; PN(0,0); PN(1,0); DF; PN(1,0); PN(3,1);
    UF; PN(3,1); PN(1,1); DF; PN(1,1); PN(1,7);
        PN(9,7); PN(9,1); PN(1,1);
    UF; PN(1,1); PN(1,3); DF; PN(1,3); PN(9,3);
    UF; PN(9,3); PN(9,5); DF; PN(9,5); PN(1,5);
    UF; PN(1,5); PN(2,8); DF; PN(2,8); PN(2,10);
        PN(8,10); PN(8,8); PN(2,8);
    UF; PN(2,8); PN(7,1); DF; PN(7,1); PN(9,0);
    UF; PN(9,0); PN(10,0);

    PXXX:=PXXX+S*COS(-D); PYYY:=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
end;

procedure HQN(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
        begin PUP; PFP; end;
    procedure DF;
        begin PDP; PFP; end;
    procedure PN(X,Y);
        value X,Y; real X,Y;
        begin real AA,BB;
            AA:=S/10*(X*COS(D)+Y*SIN(D));
            BB:=S/10*(-X*SIN(D)+Y*COS(D));
            PNP(AA,BB);
        end;
    real D,PXXX,PYYY;
    XYM(1,PXXX,PYYY);
    D:=3.1415926536/180*A;
    UF; PN(0,0); PN(2,1); DF; PN(2,1); PN(8,1);
    UF; PN(8,1); PN(5,0); DF; PN(5,0); PN(5,10);
    UF; PN(5,10); PN(10,8); DF; PN(10,8); PN(0,8);
    UF; PN(0,8); PN(0,1);
    DF; PN(0,1); PN(3,3); PN(5,8); PN(8,2); PN(10,1);
    UF; PN(10,1); PN(10,0);
    PXXX:=PXXX+S*COS(-D); PYYY:=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
end;

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procedure SEN(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF;
      begin PUP; PFP; end;
    procedure DF;
      begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
    real D,PXXX,PYYY;
    D=3.1415926536/180*A;
    XYM(1,PXXX,PYYY);
    DF; PN(0,0); PN(1,3); UF; PN(1,3); PN(2,4);
    DF; PN(2,4); PN(2,0); UF; PN(2,0); PN(4,0);
    DF; PN(4,0); PN(3,3); UF; PN(3,3); PN(3,5);
    DF; PN(3,5); PN(4,4); PN(0,4); PN(4,8);

    UF; PN(4,8); PN(2,6); DF; PN(2,6); PN(1,9);
    UF; PN(1,9); PN(1,5,8); DF; PN(1,5,8); PN(3,10);
    UF; PN(3,10); PN(8,10); DF; PN(8,10); PN(6,9);
    UF; PN(6,9); PN(5,9); DF; PN(5,9); PN(10,9);
    PN(10,5); PN(5,5); PN(5,9);
    UF; PN(5,9); PN(5,7); DF; PN(5,7); PN(10,7);
    UF; PN(10,7); PN(7,5,5); DF; PN(7,5,5); PN(7,5,0);
    UF; PN(7,5,0); PN(5,1); DF; PN(5,1); PN(7,5,3); PN(5,4);
    UF; PN(5,4); PN(10,4); DF; PN(10,4); PN(7,5,3); PN(10,1);
    UF; PN(10,1); PN(10,0);
    PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
  end;

procedure DMZS(A,S,X,Y);
  value A,S,X,Y; real A,S,X,Y;
  begin real SS,SS1;
    SS:=if S=1 then 5 else if S=2 then 10 else 20;
    SS1:=if S=1 then 3 else if S=2 then 6 else 12;
    PM(X,Y);
    DAN(A,SS);
    PM(X+9*S,Y);
    MEN(A,SS);
    PM(X+18*S,Y);
    ZU(A,SS);
    PM(X+27.5*S,Y);
    SYUKU(A,SS1);
    PM(X+32.5*S,Y);
    SHAKU(A,SS1);
  end;

procedure DM(A,S,X,Y);
  value A,S,X,Y; real A,S,X,Y;
  begin real SS;
    SS:=if S=1 then 2.5 else if S=2 then 5.0 else 10.0;
    PM(X,Y);
    DAN(A,SS);
    PM(X+4.5*S,Y);
    MEN(A,SS);
  end;

procedure HSH(A,S,X,Y);
  value A,S,X,Y; real A,S,X,Y;
  begin real SS;
    SS:=if S=1 then 1.75 else if S=2 then 3.5 else 7.0;
    PM(X,Y);
    HON(A,SS);
    PM(X+2.75*S,Y);
    SEN(A,SS);
    PM(X+5.5*S,Y);
    HUKU1(A,SS);
  end;

procedure SFI(A,S,X,Y);

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value A,S,X,Y; real A,S,X,Y;
begin real SS;
  SS:=if S=1 then 1.75 else if S=2 then 3.5 else 7.0;
  PM(X,Y);
  SOU1(A,SS);
  PM(X+2.75*S,Y);
  HUKU1(A,SS);
  PM(X+5.5*S,Y);
  IN(A,SS);
end;
procedure SCALE(X,Y,A,N);
  value X,Y,A,N; real X,Y,A,N;
  begin real NN;
    NN:=if N=1 then 0.6 else if N=2 then 1.2 else
      if N=4 then 2.4 else 3.2;
    PM(X,Y); PM(X+3*NN,Y); P(X+11*NN,Y+7*NN);
    PM(X+3*NN,Y+5*NN); P(X+4*NN,Y+6*NN);
    P(X+4*NN,Y+2*NN); PM(X+3*NN,Y+2*NN); P(X+5*NN,Y+2*NN);
    HG(X+8*NN,Y,2*N,A);
  end;
  if L≤10 ∧ L>7 ∧ W≤10 then A=80;
  if L≤7 ∧ L>5 ∧ W≤17 ∧ W>8 then A=80;
  if L≤7 ∧ L>5 ∧ W≤8 then A=50;
  if L≤5 ∧ W≤17 ∧ W>6 then A=100;
  if L≤5 ∧ W≤6 then A=50;
  LL:=LL*1000/A; H=3.5*10/A; K=15*10/A;
  K1=5*10/A; D1=D*10/A; DD1=D1+K; L1=L*1000/A;
  YL1=YL*1000/A; T=30*10/A; T1=35*10/A;
  C=10*10/A; WW=W*1000/A; W2=W*1000/A;
  W5=W*1000; W1=WL*1000/A; F1=(5/SIND(S))*10/A;
  S11=(WL/SIND(S))*1000/A; S22=((LL-0.10)*COSND(S))*1000/A;
  S33=S22/2; S44=S11/2; S55=S44-(S33+2*F1);

  PM((W1/2-30)*N,(DD1+20)*N); P((W1/2-30+55)*N,(DD1+20)*N);
  DMZS(0,N,(W1/2-28)*N,(DD1+20.3)*N);
  SCALE((W1/2-28+40)*N,(DD1+20.3)*N,A,N);
  KOSEN(K1*N,0,K1*N,D1*N); KOSEN(K1*N,D1*N,0,D1*N);
  KOSEN(0,D1*N,0,DD1*N); KOSEN(0,DD1*N,T1*N,DD1*N);
  KOSEN(T1*N,DD1*N,T1*N,D1*N); KOSEN(T1*N,D1*N,(T1+WW)*N,D1*N);
  KOSEN(T1*N,(D1+C)*N,(T1+WW)*N,(D1+C)*N);
  KOSEN((T1+WW)*N,D1*N,(T1+WW)*N,DD1*N);
  KOSEN((T1+WW)*N,DD1*N,W1*N,DD1*N);
  KOSEN(W1*N,DD1*N,W1*N,D1*N); KOSEN(W1*N,D1*N,(W1-K1)*N,D1*N);
  KOSEN((W1-K1)*N,D1*N,(W1-K1)*N,0); KOSEN((W1-K1)*N,0,K1*N,0);

  DSEN((2*K1)*N,K1*N,(W1-2*K1)*N,K1*N);
  DSEN((W1-2*K1)*N,K1*N,(W1-2*K1)*N,(DD1-K1)*N);
  DSEN((W1-2*K1)*N,(DD1-K1)*N,(W1-T)*N,(DD1-K1)*N);
  DSEN((W1-T)*N,(DD1-K1)*N,(W1-T)*N,K1*N);
  DSEN((W1-2*K1)*N,(D1-K1)*N,(2*K1)*N,(D1-K1)*N);

  DSEN(2*K1*N,K1*N,2*K1*N,(DD1-K1)*N);
  DSEN(2*K1*N,(DD1-K1)*N,T*N,(DD1-K1)*N);
  DSEN(T*N,(DD1-K1)*N,T*N,K1*N);
  PM((W1/2)*N,(K1-0.2)*N);
  for SY1=0 step MAS*SIND(S)*10/A until S55*SIND(S) do
    TEN((W1/2-SY1)*N,(K1-0.2)*N);
  TEN((W1/2-S55*SIND(S))*N,(K1-0.2)*N);
  PM((W1/2)*N,(D1-K1+0.2)*N);
  for SY2=0 step MAS*2*SIND(S)*10/A until S55*SIND(S) do
    TEN((W1/2-SY2)*N,(D1-K1+0.2)*N);
  TEN((W1/2-S55*SIND(S))*N,(D1-K1+0.2)*N);
  PM((W1/2)*N,(D1-K1+0.2)*N);
  for SY3=0 step MAS*SIND(S)*10/A until S55*SIND(S) do
    TEN((W1/2+SY3)*N,(D1-K1+0.2)*N);
  TEN((W1/2+S55*SIND(S))*N,(D1-K1+0.2)*N);
  PM((W1/2)*N,(K1-0.2)*N);
  for SY4=0 step MAS*2*SIND(S)*10/A until S55*SIND(S) do
    TEN((W1/2+SY4)*N,(K1-0.2)*N);
  TEN((W1/2+S55*SIND(S))*N,(K1-0.2)*N);
  PM((W1/2)*N,K1*N);
  for SY5=0 step 4*MAS*SIND(S)*10/A until S55*SIND(S) do
    DSEN((W1/2-SY5)*N,K1*N,(W1/2-SY5)*N,(D1-K1)*N);
  DSEN((W1/2-S55*SIND(S))*N,K1*N,(W1/2-S55*SIND(S))

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      *N, (D1-K1)*N);
PM((W1/2)*N, K1*N);
  for SY6=0 step MAS*4*SIND(S)*10/A until S55*SIND(S) do
    DSEH((W1/2+SY6)*N, K1*N, (W1/2+SY6)*N, (D1-K1)*N);
DSEN((W1/2+S55*SIND(S))*N, K1*N, (W1/2+S55*SIND(S))*N, (D1-K1)*N);
TEN((2*K1+0.3)*N, (DD1-K1-0.2)*N);
TEN((T-0.3)*N, (DD1-K1-0.2)*N);
TEN((W1-T+0.3)*N, (DD1-K1-0.2)*N);
TEN((W1-2*K1-0.3)*N, (DD1-K1-0.2)*N);
KYASEN(N, (W1-2*K1)*N, (DD1-K1)*N, (W1-2*K1+7)*N, -5*N);
P((W1-2*K1+12)*N, -5*N);
EENN((W1-2*K1+11)*N, -3.5*N, N, 8);
PM((W1-T1/2)*N, (DD1-K1)*N);
P((W1-T1/2-0.3)*N, (DD1-K1+1.5)*N);
P((W1-T1/2+0.3)*N, (DD1-K1+1.5)*N);
P((W1-T1/2)*N, (DD1-K1)*N);
P((W1-T1/2)*N, (DD1+3)*N); P((W1-T1/2+12)*N, (DD1+3)*N);
EENN((W1-T1/2+11)*N, (DD1+4.5)*N, N, 9);
PM((W1/2)*N, K1*N); P((W1/2)*N, -10*N);
YASEN(N, (W1/2)*N, -9.5*N, (W1/2-SSY3*SIND(S)/A)*N, -9.5*N);
PM((W1/2-SSY3*SIND(S)/A)*N, -10*N); P((W1/2-SSY3*SIND(S)/A)*N, K1*N);
SN03=(W1/2-SSY3*SIND(S)/A)*N;
HG(SN03+15*N, -9.2*N, N, SSY1); XX(SN03+18*N, -9.2*N, N);
HG(SN03+19*N, -9.2*N, N, SSY2);
EK(SN03+23*N, -9.2*N, N); HG(SN03+24*N, -9.2*N, N, SSY3);
if SSY4=0 then go to LLL3;
YASEN(N, SN03, -9.5*N, (SN03-(SSY4*SIND(S)/A)*N, -9.5*N);

PM(SN03-(SSY4*SIND(S)/A)*N, -10*N);
P(SN03-(SSY4*SIND(S)/A)*N, H*N);
HG(SN03-(SSY4*SIND(S)/A+2)*N, -9.2*N, N, SSY4);
LLL3:
YASEN(N, (W1/2)*N, -9.5*N, (W1/2+KM3*SIND(S)/A)*N, -9.5*N);
PM((W1/2+KM3*SIND(S)/A)*N, -10*N);
P((W1/2+KM3*SIND(S)/A)*N, H*N);
HG((W1/2+15)*N, -9.2*N, N, KM1); XX((W1/2+18)*N, -9.2*N, N);
HG((W1/2+19)*N, -9.2*N, N, KM2); EK((W1/2+23)*N, -9.2*N, N);
HG((W1/2+24)*N, -9.2*N, N, KM3);
if KM4=0 then go to LLL4;
YASEN(N, (W1/2+KM3*SIND(S)/A)*N, -9.5*N,
      (W1/2+KM3*SIND(S)/A+KM4*SIND(S)/A)*N, -9.5*N);
PM((W1/2+KM3*SIND(S)/A+KM4*SIND(S)/A)*N, -10*N);
P((W1/2+KM3*SIND(S)/A+KM4*SIND(S)/A)*N, H*N);
HG((W1/2+KM3*SIND(S)/A)*N, -9.2*N, N, KM4);
LLL4:
  if S=90 then go to DM1;
PM((W1-2*K1-S22*SIND(S))*N, (K1-0.2)*N);
for SY7=0 step MAS*2*SIND(S)*10/A until S22*SIND(S) do
  TEN((W1-2*K1-S22*SIND(S)+SY7)*N, (K1-0.2)*N);
TEN((W1-2*K1)*N, (K1-0.2)*N);
PM((W1-2*K1-S22*SIND(S))*N, (D1-K1+0.2)*N);
for SY8=0 step MAS*SIND(S)*10/A until S22*SIND(S) do
  TEN((W1-2*K1-S22*SIND(S)+SY8)*N, (D1-K1+0.2)*N);
TEN((W1-2*K1)*N, (D1-K1+0.2)*N);
PM((2*K1-S22*SIND(S))*N, (K1-0.2)*N);
for SY9=0 step MAS*SIND(S)*10/A until S22*SIND(S) do
  TEN((2*K1+S22*SIND(S)-SY9)*N, (K1-0.2)*N);
TEN((2*K1)*N, (K1-0.2)*N);
PM((2*K1+S22*SIND(S))*N, (D1-K1+0.2)*N);
for SY10=0 step 2*MAS*SIND(S)*10/A until S22*SIND(S) do
  TEN((2*K1+S22*SIND(S)-SY10)*N, (D1-K1+0.2)*N);
TEN((2*K1)*N, (D1-K1+0.2)*N);
PM((2*K1+S22*SIND(S))*N, K1*N);
for SY11=0 step 4*MAS*SIND(S)*10/A until S22*SIND(S) do
  DSEN((2*K1+S22*SIND(S)-SY11)*N, K1*N, (2*K1+S22*SIND(S)
    -SY11)*N, (D1-K1)*N);
PM((W1-2*K1-S22*SIND(S))*N, K1*N);
for SY12=0 step 4*MAS*SIND(S)*10/A until S22*SIND(S) do
  DSEN((W1-2*K1-S22*SIND(S)+SY12)*N, K1*N, (W1-2*K1-S22*
    SIND(S)+SY12)*N, (D1-K1)*N);

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PM((W1-2*K1-S22*SIND(S))*N,H*N); P((W1-2*K1-S22*SIND(S)
)*N,-5*N);
YASEN(N,(W1-2*K1-S22*SIND(S))*N,-4.5*N,
(W1-2*K1-S22*SIND(S)+KMM3*SIND(S)/A)*N,-4.5*N);
PM((W1-2*K1-S22*SIND(S)+KMM3*SIND(S)/A)*N,-5*N);
P((W1-2*K1-S22*SIND(S)+KMM3*SIND(S)/A)*N,H*N);

SN01=(W1-2*K1-S22*SIND(S))*N;
HG(SN01+10*N,-4.2*N,N,KMM1);
HG(SN01+18*N,-4.2*N,N,KMM3);
if KMM4=0 then go to LLL1;
YASEN(N,SN01+(KMM3*SIND(S)/A)*N,-4.5*N,
SN01+(KMM3*SIND(S)/A+KMM4*SIND(S)/A)*N,-4.5*N);
PM(SN01+(KMM3*SIND(S)/A+KMM4*SIND(S)/A)*N,-5*N);
P(SN01+(KMM3*SIND(S)/A+KMM4*SIND(S)/A)*N,H*N);
HG((SN01+(KMM3*SIND(S)/A-1)*N),-4.2*N,N,KMM4);
LLL1:
SN02=(2*K1+S22*SIND(S))*N;
PM(SN02,K1*N); P(SN02,-5*N);
YASEN(N,SN02,-4.5*N,SN02-(SYY3*SIND(S)/A)*N,-4.5*N);
PM(SN02-SYY3*SIND(S)/A*N,-5*N);
P(SN02-SYY3*SIND(S)/A*N,K1*N);
HG((K1+10)*N,-4.2*N,N,SYY1); XX((K1+13)*N,-4.2*N,N);
HG((K1+15)*N,-4.2*N,N,SYY2);
EK((K1+20)*N,-4.2*N,N);
HG((K1+21)*N,-4.2*N,N,SYY3);
if SYY4=0 then go to LLL2;
YASEN(N,(SN02-SYY3*SIND(S)/A)*N,-4.5*N,(K1*2)
*N,-4.5*N);
PM((K1*2)*N,-5*N); P((K1*2)*N,K1*N);
HG(K1*N,-4.2*N,N,SYY4);
LLL2:
if S=90 then go to DM1;
DSEN(2*K1*N,(K1+0.8)*N,(2*K1+YL1*SIND(S))*N,(K1+0.8)*N);
PM(2*K1*N,(K1+0.5)*N);
for YOU=0 step YE2*SIND(S)/A until (YE3+YE4)*SIND(S)/A do
TEN((2*K1+YOU)*N,(K1+0.5)*N);
TEN((2*K1+(YE3+YE4)*SIND(S)/A)*N,(K1+0.5)*N);
PM(K1*2*N,(K1+0.7)*N); P(2*K1*N,-15*N);
YASEN(N,2*K1*N,-14.5*N,(K1*2+(YE3*SIND(S)
/A)*N,-14.5*N);
PM((2*K1+(YE3*SIND(S)/A)*N,-15*N);
P((2*K1+(YE3*SIND(S)/A)*N,(K1+0.7)*N);
HG(2*K1*N,-14.2*N,N,YE1); XX((2*K1+2)*N,-14.2*N,N);
HG((2*K1+3)*N,-14.2*N,N,YE2); EK((2*K1+7)*N,-14.2*N,N);
HG((2*K1+8)*N,-14.2*N,N,YE3);
if YE4=0 then go to DM1;
YASEN(N,(2*K1+YE3*SIND(S)/A)*N,-14.5*N,
(2*K1+YL1*SIND(S))*N,-14.5*N);
PM((2*K1+YL1*SIND(S))*N,-15*N);
P((2*K1+YL1*SIND(S))*N,K1*N);
HG((2*K1+YE3*SIND(S)/A-1)*N,-17*N,N,YE4);
PM((T1/2)*N,(K1+1)*N); P((T1/2-0.3)*N,(K1+1+1.5)*N);
P((T1/2+0.3)*N,(K1+1+1.5)*N); P((T1/2)*N,(K1+1)*N);
P((T1/2)*N,(DD1+5)*N); P((T1+5)*N,(DD1+5)*N);
EENN((T1+4)*N,(DD1+6.5)*N,N,11);

DM1:
PM(0,DD1*N); P(0,(DD1+15)*N);
YASEN(N,0,(DD1+14.5)*N,W1*N,(DD1+14.5)*N);
PM(W1*N,(DD1+15)*N); P(W1*N,DD1*N);
SFI(0,N,(W1/2-10)*N,(DD1+14.8)*N);
HG((W1/2)*N,(DD1+14.8)*N,N,WL*1000);
YASEN(N,0,(DD1+9.5)*N,T1*N,(DD1+9.5)*N);
YASEN(N,T1*N,(DD1+9.5)*N,(W1-T1)*N,(DD1+9.5)*N);
YASEN(N,(W1-T1)*N,(DD1+9.5)*N,W1*N,(DD1+9.5)*N);
HG(1*N,(DD1+9.8)*N,N,350); PM(T1*N,(DD1+10)*N);
P(T1*N,DD1*N);
HSH(0,N,(W1/2-10)*N,(DD1+9.8)*N);
HG((W1/2)*N,(DD1+9.8)*N,N,W5);
HG((W1-T1+1)*N,(DD1+9.8)*N,N,350);
PM((W1-T1)*N,(DD1+10)*N); P((W1-T1)*N,DD1*N);

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PM(K1*N,0); P(-5*N,0); YASEN(N,-4,5*N,0,-4,5*N,D1*N);
YASEN(N,-4,5*N,D1*N,-4,5*N,DD1*N); PM(-5*N,D1*N);
P(0,D1*N);
PM(0,DD1*N); P(-5*N,DD1*N); VG(-5,0*N,0,N,D*10);
VG(-5,0*N,(D1-1)*N,N,150);
DM(0,N,(W1/4-9)*N,(DD1+5)*N);
F((W1/4)*N,(DD1+5)*N,N); BAR((W1/4+2)*N,(DD1+5)*N,N);
F((W1/4+5)*N,(DD1+5)*N,N);
DM(0,N,(W1*3/4-9)*N,(DD1+5)*N);
G((W1*3/4)*N,(DD1+5)*N,N); BAR((W1*3/4+2)*N,(DD1+5)*N,N);
G((W1*3/4+5)*N,(DD1+5)*N,N);
PM((W1/4+15)*N,-5*N); P((W1/4+15-1.5)*N,-4,5*N);
P((W1/4+15-1.5)*N,-5*N); PM((W1/4+15)*N,-5*N); P((W1/4+10)*N,-5*N);
P((W1/4+10)*N,(DD1+5)*N); P((W1/4+15)*N,(DD1+5)*N);
P((W1/4+15-1.5)*N,(DD1+5,5)*N); P((W1/4+15-1.5)*N,(DD1+5)*N);
AA((W1/4+11.5)*N,(DD1+5,3)*N,N); AA((W1/4+11.5)*N,-4,7*N,N);

PM((W1-K1)*N,-15*N); P((W1-K1-1.5)*N,-14,5*N);
P((W1-K1-1.5)*N,-15*N); PM((W1-K1)*N,-15*N);
P((W1-K1-5)*N,-15*N); P((W1-K1-5)*N,(DD1+5)*N);
P((W1-K1)*N,(DD1+5)*N); P((W1-K1-1.5)*N,(DD1+5,5)*N);
P((W1-K1-1.5)*N,(DD1+5)*N);
B((W1-K1-4)*N,(DD1+5,3)*N,N);
B((W1-K1-4)*N,-14,7*N,N);

KYASEN(N,(W1/2+15)*N,K1*N,(W1/2+15)*N,(DD1+1)*N);
P((W1/2+20)*N,(DD1+1)*N);
EENN((W1/2+19)*N,(DD1+2,5)*N,N,5);
F1=(W1/2-4)*MAS*SIND(S)*10/A*N;
KYASEN(N,F1,(D1/2)*N,F1+3*N,(DD1+1)*N);
P(F1+8*N,(DD1+1)*N); EENN(F1+7*N,(DD1+2,5)*N,N,12)*

PM((W1/2)*N,(DD1-K1)*N); P((W1/2)*N,(DD1+2)*N);
PM((W1/2)*N,(DD1+2,5)*N);

P((W1/2)*N,(DD1+3)*N); PM((W1/2)*N,(DD1+3,5)*N);
P((W1/2)*N,(DD1+6)*N); CL((W1/2-0,5)*N,(DD1+6,5)*N,N);

```

end;

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READ(SP,SPP,FU,ZFU,SKEW,MA,HA,YA,Y,D,S1,S2,S3,S4,SS1,
SS2,SS3,SS4,K1,K2,K3,K4,KK1,KK2,KK3,KK4,Y1,Y2,Y3,
Y4,SIZE);
if SP=0 then go to OWARI;
PMOVE(190*SIZE,200*SIZE); PREADY(0,0);
DANMENZU(SP,SPP,FU,ZFU,SKEW,MA,HA,YA,Y,D,S1,S2,S3,
S4,SS1,SS2,SS3,SS4,K1,K2,K3,K4,KK1,KK2,KK3,
KK4,Y1,Y2,Y3,Y4,SIZE);
PMOVE(-190*SIZE,-200*SIZE);
OWARI:

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end;

```

begin
external PREADY,PSENX,PSENA,PMOVE,POUTI,PENX,PEN;
real SP,SPP,FU,ZFU,SKEW,D,MA,HA,H,YA,Y,S1,S2,S3,S4,SS1,SS2,SS3,SS4,K1,K2,K3,K4,
KK1,KK2,KK3,KK4,H1,H2,H3,H4,HH1,HH2,HH3,HH4,Y1,Y2,Y3,Y4,SIZE;
procedure HEIMENZU(L,LL,W,WL,S,D,MAS,HHAS,HAS,YAS,YL,SSY1,SSY2,SSY3,SSY4,
SY1,SY2,SY3,SY4,KM1,KM2,KM3,KM4,KMM1,KMM2,KMM3,KMM4,
HL1,HL2,HL3,HL4,HU1,HU2,HU3,HU4,YE1,YE2,YE3,YE4,N);
value L,LL,W,WL,S,D,MAS,HHAS,HAS,YAS,YL,SSY1,SSY2,SSY3,SSY4,
SY1,SY2,SY3,SY4,KM1,KM2,KM3,KM4,KMM1,KMM2,KMM3,KMM4,
HL1,HL2,HL3,HL4,HU1,HU2,HU3,HU4,YE1,YE2,YE3,YE4,N;
real L,LL,W,WL,S,D,MAS,HHAS,HAS,YAS,YL,SSY1,SSY2,SSY3,SSY4,
SY1,SY2,SY3,SY4,KM1,KM2,KM3,KM4,KMM1,KMM2,KMM3,KMM4,
HL1,HL2,HL3,HL4,HU1,HU2,HU3,HU4,YE1,YE2,YE3,YE4,N;
begin
real SL,WL1,W1,Y1,YAS1,G,G1,G2,G3,G4,G5,G6,G7,P1,SN1,SN2,SN3,SN,
S1,S22,S3,S4,S5,S6,S7,S8,S9,W2,SS,H0V,Y0V,Y0H,XXX,LL1,L1,
H,K,K1,X,YL1,WL,H1,GG3,SS1,SS2,SS3,SS4,SS5,SS6,SS7,DX,SSS,
SSS1,F1,SSS2,A,XX1,Y0H1,Y0V1,PP1;
procedure P(A,B);
value A,B; real A,B;
PSENX(A,B);
procedure PM(A,B);
value A,B; real A,B;
PMOVE(A,B);
procedure VG(X,Y,S,A);
value X,Y,S,A; real X,Y,S; integer A;
begin integer B,N,M;
B:=A; PM(X,Y);
N:=if B<10 then 1 else if B<100 then 2 else if B<1000 then 3 else
if B<10000 then 4 else if B<100000 then 5 else 6;
M:=if S=1 then 2 else if S=2 then 4 else if S=4 then 6 else 8;
POUTI(270,0,M,N,B);
end;
procedure HG(X,Y,S,A);
value X,Y,S,A; real X,Y,S; integer A;
begin integer B,N,M;
B:=A; PM(X,Y);
N:=if B<10 then 1 else if B<100 then 2 else if B<1000 then 3 else
if B<10000 then 4 else if B<100000 then 5 else 6;
M:=if S=1 then 2 else if S=2 then 4 else if S=4 then 6 else 8;
POUTI(0,M,N,B);
end;
procedure AG(X,Y,M,A,S);
value X,Y,M,S,A; real X,Y,M,S; integer A;
begin integer B,N; real AN,H;
B:=A; AN:=S; PM(X,Y);
H:=if M=1 then 2 else if M=2 then 4 else if M=4 then 6 else 8;
N:=if B<10 then 1 else if B<100 then 2 else
if B<1000 then 3 else if B<10000 then 4 else
if B<100000 then 5 else 6;
POUTI(AN,H,N,B);
end;
procedure EENN(X,Y,S,A);
value X,Y,S,A; real X,Y,S,A;
begin
PM(X,Y); PENX(X,Y,1.5*S);
if A<10 then HG(X-(3*S),Y-(1*S),S,A) else
HG(X-(3.6*S),Y-(1*S),S,A);
end;
procedure XY(L,A,X1,Y1,X2,Y2);
value L,A,X1,Y1;
real L,A,X1,Y1,X2,Y2;
begin
if A<360 v A>=360 then A:=A-(A<360)*360;
if A>180 v A<=-180 then A:=A-(A<180)*360;
if A<=90 v A>90 then
begin
X2=X1+L*COS(A*3.1415926/180);
Y2=Y1+L*SIN(A*3.1415926/180);
end;
if A>90 then
begin
X2=X1-L*COS((180-A)*3.1415926/180);

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Y2=Y1+L*SIN((180-A)*3.1415926/180);
end;
if A<-90 then
begin
X2=X1-L*COS((180+A)*3.1415926/180);
Y2=Y1-L*SIN((180+A)*3.1415926/180);
end;
end;

procedure YASEN(S,X1,Y1,X2,Y2);
value S,X1,Y1,X2,Y2;
real S,X1,Y1,X2,Y2;
begin
real X,Y,X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,A1,A2,AA,AT,L;
L:=SQRT((X2-X1)2+(Y2-Y1)2);
AT:=180/3.1415926;
if X2=X1 ^ Y2=Y1 then go to LL1;
if X2<X1 ^ Y2>Y1 then AA:=(Y2-Y1)/(X2-X1);
A:=(if X2=X1 then 90 else if Y2=Y1 then 0 else AT*ARCTAN(AA));
if X2=X1 then
begin
if Y2>Y1 then
begin
A1:=A; A2:=-A;
end else
begin
A1:=-A; A2:=A;
end;
end;
if X2>X1 then
begin
A1:=A; A2:=A+180;
end;
if X2<X1 then
begin
A1:=A+180; A2:=A;
end;
if L>4*S then
begin
XY(1.5*S,A1,X1,Y1,X,Y); XY(0.3*S,A1+90,X,Y,X3,Y3);
XY(0.3*S,A1-90,X,Y,X4,Y4); XY(1.5*S,A2,X2,Y2,X,Y);
XY(0.3*S,A2+90,X,Y,X5,Y5); XY(0.3*S,A2-90,X,Y,X6,Y6);
PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1); P(X2,Y2);
P(X5,Y5); P(X6,Y6); P(X2,Y2);
end;
if L<4*S then
begin
XY(1.5*S,A2,X1,Y1,X,Y); XY(0.3*S,A2+90,X,Y,X3,Y3);
XY(0.3*S,A2-90,X,Y,X4,Y4); XY(1.5*S,A1,X2,Y2,X,Y);
XY(0.3*S,A1+90,X,Y,X5,Y5); XY(0.3*S,A1-90,X,Y,X6,Y6);
PM(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1);
XY(3*S,A2,X1,Y1,X,Y); P(X,Y);
XY(3*S,A1,X2,Y2,X,Y); PM(X,Y); P(X2,Y2); P(X5,Y5);
P(X6,Y6); P(X2,Y2);
end;
LL1:
end;

procedure TENSEN(S,X1,Y1,X2,Y2);
value S,X1,Y1,X2,Y2;
real S,X1,Y1,X2,Y2;
begin
real L,X3,Y3,X4,Y4,A,AA,AT;
integer I,N;
L:=SQRT((X2-X1)2+(Y2-Y1)2);
N:=L/(2*S);
if N>1 then
begin
if X2<X1 ^ Y2>Y1 then AA:=(Y2-Y1)/(X2-X1);
AT:=180/3.1415926;
A:=(if X2=X1 then 90 else if Y2=Y1 then 0 else AT*ARCTAN(AA));
if X2=X1 ^ Y2<Y1 then A:=-1*A;

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if X2<X1 then A=A+180;
for I=1 step 1 until N do
begin
  XY(1,5*S,A,X1,Y1,X3,Y3); XY(2*S,A,X1,Y1,X4,Y4);
  PM(X1,Y1); P(X3,Y3); X1=X4; Y1=Y4;
end;
PM(X1,Y1); P(X2,Y2);
end;
if N≤1 then
begin
PM(X1,Y1); P(X2,Y2);
end;
end;

procedure DSEN(X1,Y1,X2,Y2);
value X1,Y1,X2,Y2;
real X1,Y1,X2,Y2;
begin
  real X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,AA,AT;
  if X2=X1 ^ Y2=Y1 then go to LL2;
  if X2=X1 ^ Y2≠Y1 then
  begin
    X3=X1+0.1; Y3=Y1; X4=X1-0.1; Y4=Y1;
    X5=X2+0.1; Y5=Y2; X6=X2-0.1; Y6=Y2;
  end;
  if X2≠X1 ^ Y2=Y1 then
  begin
    X3=X1; Y3=Y1+0.1; X4=X1; Y4=Y1-0.1;
    X5=X2; Y5=Y2+0.1; X6=X2; Y6=Y2-0.1;
  end;
  if X2≠X1 ^ Y2≠Y1 then
  begin
    AA=(Y2-Y1)/(X2-X1); AT=180/3.1415926; A=AT*ARCTAN(AA);
    XY(0.1,A+90,X1,Y1,X3,Y3); XY(0.1,A-90,X1,Y1,X4,Y4);
    XY(0.1,A+90,X2,Y2,X5,Y5); XY(0.1,A-90,X2,Y2,X6,Y6);
  end;
  PM(X1,Y1); P(X3,Y3); P(X5,Y5); P(X6,Y6); P(X4,Y4);
  P(X1,Y1); P(X2,Y2);
  LL2:
end;

procedure KOSEN(X1,Y1,X2,Y2);
value X1,Y1,X2,Y2;
real X1,Y1,X2,Y2;
begin
  real X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,AA,AT;
  if X2=X1 ^ Y2=Y1 then go to LL2;
  if X2=X1 ^ Y2≠Y1 then
  begin
    X3=X1+0.1; Y3=Y1; X4=X1-0.1; Y4=Y1;
    X5=X2+0.1; Y5=Y2; X6=X2-0.1; Y6=Y2;
  end;
  if X2≠X1 ^ Y2=Y1 then
  begin
    X3=X1; Y3=Y1+0.1; X4=X1; Y4=Y1-0.1;
    X5=X2; Y5=Y2+0.1; X6=X2; Y6=Y2-0.1;
  end;
  if X2≠X1 ^ Y2≠Y1 then
  begin
    AA=(Y2-Y1)/(X2-X1); AT=180/3.1415926; A=AT*ARCTAN(AA);
    XY(0.1,A+90,X1,Y1,X3,Y3); XY(0.1,A-90,X1,Y1,X4,Y4);
    XY(0.1,A+90,X2,Y2,X5,Y5); XY(0.1,A-90,X2,Y2,X6,Y6);
  end;
  PM(X1,Y1); P(X3,Y3); P(X5,Y5); P(X6,Y6); P(X4,Y4);
  P(X1,Y1); P(X2,Y2);
  LL2:
end;

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procedure KYASEN(S,X1,Y1,X2,Y2);
value S,X1,Y1,X2,Y2;
real S,X1,Y1,X2,Y2;
begin
  real X,Y,X3,Y3,X4,Y4,X5,Y5,X6,Y6,A,A1,A2,AA,AT,L;
  L:=SQRT((X2-X1)2+(Y2-Y1)2);
  AT:=180/3.1415926;
  if X2=X1 ^ Y2=Y1 then go to LL1;
  if X2<X1 ^ Y2<Y1 then AA:=(Y2-Y1)/(X2-X1);
  A:=(if X2=X1 then 90 else if Y2=Y1 then 0 else
    AT*ARCTAN(AA));
  if X2=X1 then
    begin
      if Y2>Y1 then
        begin
          A1:=A; A2:=-A;
        end else
        begin
          A1:=-A; A2:=A;
        end;
    end;
  if X2>X1 then
    begin
      A1:=A; A2:=A+180;
    end;
  if X2<X1 then
    begin
      A1:=A+180; A2:=A;
    end;
  XY(1,5*S,A1,X1,Y1,X,Y); XY(0,3*S,A1+90,X,Y,X3,Y3);
  XY(0,3*S,A1-90,X,Y,X4,Y4); XY(1,5*S,A2,X2,Y2,X,Y);
  XY(0,3*S,A2+90,X,Y,X5,Y5); XY(0,3*S,A2-90,X,Y,X6,Y6);

  PH(X1,Y1); P(X3,Y3); P(X4,Y4); P(X1,Y1); P(X2,Y2);
  LL1:
end;

procedure AA(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
  SS:=if S=1 then 0.2 else if S=2 then 0.4 else
    if S=4 then 1 else 2;
  PM(X,Y); P(X+2,5*SS,Y+10*SS); P(X+5*SS,Y+0); PM(X+3.75*SS,Y+5*SS);
  P(X+1.25*SS,Y+5*SS);
end;

procedure B(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
  SS:=if S=1 then 0.2 else if S=2 then 0.4 else if S=4 then
    1 else 2;
  PM(X,Y); P(X,Y+10*SS); P(X+3*SS,Y+10*SS); P(X+5*SS,Y+7.5*SS);
  P(X+3.5*SS,Y+5*SS); P(X,Y+5*SS); PM(X+3.5*SS,Y+5*SS);
  P(X+5*SS,Y+2.5*SS); P(X+3.5*SS,Y); P(X,Y);
end;

procedure C(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
  SS:=if S=1 then 0.2 else if S=2 then 0.4 else
    if S=4 then 1 else 2;
  PM(X,Y); PM(X+5*SS,Y+8*SS); P(X+3.5*SS,Y+10*SS);
  P(X+1*SS,Y+10*SS); P(X,Y+9*SS); P(X,Y+1*SS); P(X+1*SS,Y);
  P(X+3.5*SS,Y); P(X+5*SS,Y+2*SS);
end;

procedure DD(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
  SS:=if S=1 then 0.2 else if S=2 then 0.4 else
    if S=4 then 1 else 2;
  PM(X,Y); P(X+0,Y+10*SS); P(X+3*SS,Y+10*SS); P(X+5*SS,Y+8*SS);
  P(X+5*SS,Y+2*SS); P(X+3*SS,Y); P(X,Y);
end;

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procedure E(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+5*SS,Y+0); P(X,Y); P(X+0,Y+10*SS); P(X+5*SS,Y+10*SS);
    PM(X+4*SS,Y+5*SS); P(X,Y+5*SS);
  end;
procedure F(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+1*SS,Y+0); P(X+1*SS,Y+10*SS); PM(X+0,Y+10*SS);
    PM(X+5*SS,Y+10*SS); PM(X+4*SS,Y+5*SS); P(X+1*SS,Y+5*SS);
  end;
procedure GG(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+6*SS,Y+9*SS); P(X+5*SS,Y+10*SS); P(X+1*SS,Y+10*SS);
    P(X,Y+9*SS); P(X,Y+1*SS); P(X+1*SS,Y); P(X+5*SS,Y);
    P(X+6*SS,Y+1*SS); PM(X+6*SS,Y);
    P(X+6*SS,Y+5*SS); P(X+4*SS,Y+5*SS);
  end;
procedure BAR(X,Y,S);
  value X,Y,S; real X,Y,S;
  begin real SS;
    SS:=if S=1 then 0,2 else if S=2 then 0,4 else
      if S=4 then 1 else 2;
    PM(X+0,Y+5*SS); P(X+10*SS,Y+5*SS);
  end;
procedure CL(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF; begin PUP; PFP; end;
    procedure DF; begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
    real D,PXXX,PYYY;
    D=3,1415926536/180*A;
    XYM(1,PXXX,PYYY);
    UF; PN(0,0); PN(3,5,10); DF; PN(3,5,10); PN(0,0); PN(5,0);
    PN(4,5,1); UF; PN(4,5,1); PN(5,6,5);
    DF; PN(5,6,5); PN(4,8); PN(1,8); PN(0,6); PN(0,2,5);
    PN(2,1,5); PN(4,1,5); PN(5,3);
    UF; PN(5,3); PN(10,0);
    PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
    XYM(0,PXXX,PYYY);
  end;
procedure XX(A,S);
  value A,S; real A,S;
  begin external XYM,*PUP,*PDP,*PFP,PNP;
    procedure UF; begin PUP; PFP; end;
    procedure DF; begin PDP; PFP; end;
    procedure PN(X,Y);
      value X,Y; real X,Y;
      begin real AA,BB;
        AA=S/10*(X*COS(D)+Y*SIN(D));
        BB=S/10*(-X*SIN(D)+Y*COS(D));
        PNP(AA,BB);
      end;
    real D,PXXX,PYYY;
    D=3,1415926536/180*A;
    XYM(1,PXXX,PYYY);

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UF; PH(0,0); PN(2,2); DF; PN(2,2); PN(10,10); UF;
PN(10,10); PN(2,10);
DF; PN(2,10); PN(10,2); UF; PN(10,2); PN(10,0);
PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
XYM(0,PXXX,PYYY);
end;
procedure EK(A,S);
value A,S; real A,S;
begin external XYM,*PUP,*PDP,*PFP,PNP;
procedure UF; begin PUP; PFP; end;
procedure DF; begin PDP; PFP; end;
procedure PN(X,Y);
value X,Y; real X,Y;
begin real AA,BB;
AA=S/10*(X*COS(D)+Y*SIN(D));
BB=S/10*(-X*SIN(D)+Y*COS(D));
PNP(AA,BB);
end;
real D,PXXX,PYYY;
D=3.1415926536/180*A;
XYM(1,PXXX,PYYY);
UF; PH(0,0); PN(2,5); DF; PN(2,5); PN(10,5);
UF; PH(10,5); PN(2,9);
DF; PH(2,9); PN(10,9); UF; PN(10,9); PN(10,0);
PXXX=PXXX+S*COS(-D); PYYY=PYYY+S*SIN(-D);
XYM(0,PXXX,PYYY);
end;
real procedure SIND(S);
value S; real S;
begin real PAI;
PAI=3.14159265358; SIND=SIN(S*PAI/180);
end;
real procedure COSND(S);
value S; real S;
begin real PAI;
PAI=3.14159265358; COSND=COS(S*PAI/180);
end;
real procedure TAND(S);
value S; real S;
begin real PAI;
PAI=3.14159265358;
TAND=(SIN(PAI*S/180))/(COS(PAI*S/180));
end;
procedure KAKE(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
SS:=if S=1 then 0.3 else if S=2 then 0.6 else
if S=4 then 1.2 else 2.5;
PM(X+1*SS,Y); P(X+4*SS,Y+5*SS); PM(X+1*SS,Y+5*SS);
P(X+4*SS,Y);
end;
procedure EKORU(X,Y,S);
value X,Y,S; real X,Y,S;
begin real SS;
SS:=if S=1 then 0.2 else if S=2 then 0.4 else
if S=4 then 1 else 2;
PM(X+0.5*SS,Y+3*SS); P(X+5*SS,Y+3*SS);
PM(X+0.5*SS,Y+7*SS); P(X+5*SS,Y+7*SS);
end;
if L≤10 ∧ L>7 ∧ W≤10 then A=80;
if L≤7 ∧ L>5 ∧ W≤17 ∧ W>8 then A=80;
if L≤7 ∧ L>5 ∧ W≤8 then A=50;
if L≤5 ∧ W≤17 ∧ W>6 then A=100;
if L≤5 ∧ W≤6 then A=50;
SS:=if N=1 then 1.5 else if N=2 then 3 else
if N=4 then 6 else 12;
W2=W*1000/A;
WWL=WL*1000/A; LL1=LL*1000/A;
H=3.5*10/A;
K=15*10/A;
K K1=5*10/A; L1=L*1000/A; YL1=YL*1000/A;
DX=350/A; SL=(WL/SIND(S))*1000/A;

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WL1=SL*COSND(S);
W1=WL*1000/A; YAS1=YAS*10/A; G=(5/TAND(S))*10/A;
G1=((WL-0,10)/TAND(S))*1000/A; G2=((WL-0,20)/TAND(S))*1000/A;
G3=(35/TAND(S))*10/A;
GG3=(30/TAND(S))*10/A; G4=((W-0,05)/TAND(S))*1000/A;
G5=(10/TAND(S))*10/A; G6=((WL-0,20)/TAND(S))*1000/A;
G7=(WL/TAND(S))*1000/A; XXX=(LL1/2-K1)*COSND(S);
XX1=XXX*SIND(S); F1=(5/SIND(S))*10/A;
S1=(WL/SIND(S))*1000/A; S22=((LL-0,10)*COSND(S))*1000/A;
S3=S22/2; S4=S1/2; S5=S4-(S3+2*F1);
S6=(S1/2)*COSND(S); S7=((LL1-2*K1)*SIND(S)); S8=S7/2;
S9=S3+S5; SS1=(L/10)*1000/A; SS2=((LL-L)-0,10)/2)*1000/A;
SS3=(D-(3,5*2))*10/A; SS4=SS1+SS2+SS3; SS5=S7/2;
SS6=SS5-SS4; SS7=SS6+SS3; SSS=LL1/2-K1; SSS1=SSS-SS4;
SSS2=SSS1+SS3;

KOSEN(0,0,(LL1/2)*N,0); KOSEN((LL1/2)*N,0,(LL1/2+G)*N,-K1*N);
KOSEN((LL1/2+G)*N,-K1*N,(LL1+G)*N,-K1*N);
KOSEN((LL1+G)*N,-K1*N,(LL1+G+G1)*N,(-WWL+K1)*N);
KOSEN((LL1+G+G1)*N,-K1*N,(-WWL+K1)*N,(LL1/2+G+G1)*N,(-WWL+K1)*N);
KOSEN((LL1/2+G+G1)*N,(-WWL+K1)*N,(G7+LL1/2)*N,-WWL*N);
KOSEN((G7+LL1/2)*N,-WWL*N,G7*N,-WWL*N);
KOSEN(G7*N,-WWL*N,0,0); PM(G*N,-K1*N);
TENSEN(N,G*N,-K1*N,(G+LL1/2)*N,-K1*N);
TENSEN(N,G3*N,-DX*N,(G3+LL1/2)*N,-DX*N);
DSEN((LL1/2+2*G)*N,-100*N/A,(2*G+K1)*N,-100*N/A);
DSEN((2*G+K1)*N,-100*N/A,(K1+GG3)*N,-300*N/A);
DSEN((K1+GG3)*N,-300*N/A,(GG3+LL1/2)*N,-300*N/A);
for P1=0 step (HHAS*3*10/A) until (LL1/2-K1) do
begin
DSEN((GG3+LL1/2-P1)*N,-300*N/A,(2*G+LL1/2-P1)*N,-100*N/A);
end;
if S=90 then go to L20;
PM((G1+K1)*N,(-W1+K1*2)*N);
TENSEN(N,(G1+K1)*N,(-W1+K1*2)*N,((G1+K1)-(YL1*COSND(S)))*N,
(-W1+K1*2+YL1*SIND(S))*N);
TENSEN(N,((G1+K1)-YL1*COSND(S))*N,(-W1+K1*2+YL1*SIND(S))*N,
((G1+K1)-YL1*COSND(S)+YL1)*N,(-W1+K1*2+YL1*SIND(S))*N);
TENSEN(N,((G1+K1)-YL1*COSND(S)+YL1)*N,(-W1+K1*2+YL1*SIND(S))*N,
(G1+K1+YL1)*N,(-W1+K1*2)*N);
TENSEN(N,(G1+K1+YL1)*N,(-W1+K1*2)*N,(G1+K1)*N,(-W1+K1*2)*N);
for P1=YAS1 step YAS1 until YL1 do
begin
TENSEN(N,(G1+K1+P1)*N,(-W1+K1*2)*N,(G1+K1+P1-(YL1*COSND(S)))*N,
(-W1+K1*2+(YL1*SIND(S)))*N);
end;
PM((G1+K1)*N,(-W1+K1*2)*N);
for P1=YAS1 step YAS1 until YL1 do
begin
TENSEN(N,(G1+K1-(P1*COSND(S)))*N,(-W1+2*K1+(P1*SIND(S)))*N,
(G1+K1-(P1*COSND(S))+YL1)*N,(-W1+2*K1+(P1*SIND(S)))*N);
end;
YOH=(G1+K1-(YL1*COSND(S)))*N; YOV=(-W1+K1*2+(YL1*SIND(S)))*N;
PM(YOH,YOV); P(YOH,YOV+5*N);
YASEN(N,YOH,YOV+4,5*N,YOH+((YE1*YE2)/A)*N,YOV+4,5*N);
PM(YOH+((YE1*YE2)/A)*N,YOV+5*N); P(YOH+((YE1*YE2)/A)*N,YOV);
HG(YOH,YOV+5*N,N,YE1); KAKE(YOH+2*N,YOV+5*N,N);
HG(YOH+3*N,YOV+5*N,N,YE2); EKORU(YOH+7*N,YOV+5*N,N);
HG(YOH+9*N,YOV+5*N,N,YE3);
if YE4=0 then go to L20;
YASEN(N,YOH+((YE1*YE2)/A)*N,YOV+4,5*N,YOH+((YE1*YE2)+YE4)/A)*N,
YOV+4,5*N);
PM(YOH+((YE1*YE2)+YE4)/A)*N,YOV+5*N);
P(YOH+((YE1*YE2)+YE4)/A)*N,YOV);
HG(YOH+(YE3/A-1)*N,YOV+2,0*N,N,YE4);
L20:
KOSEN(WL1*N,-W1*N,(WL1+LL1/2)*N,-W1*N);

KOSEN((WL1+LL1/2)*N,-W1*N,(WL1+LL1/2+G3)*N,(-W1+35*10/A)*N);
KOSEN((WL1+LL1/2+G3)*N,(-W1+(35*10/A))*N,(WL1-G3)*N,
(-W1+(35*10/A))*N);

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YOH=(LL1/2+G5+S8/SIND(S))*N;
DSEN((LL1/2+G5)*N,(-10*10/A)*N,YOH,(-10*10/A)*N);
DSEN(YOH,(-10*10/A)*N,YOH+G6*N,(-W1+(10*10/A))*N);
DSEN(YOH+G6*N,(-W1+(10*10/A))*N,(LL1/2+G1)*N,(-W1+(10*10/A))*N);
PH((S6+LL1/2)*N,(-W1/2)*N);
for P1=0 step (2*MAS*10/A) until S5 do
begin
DSEN((S6-(P1*COSND(S))+LL1/2)*N,(-W1/2+(P1*SIND(S))*N,
(S6+LL1/2-(P1*COSND(S))+(S8*SIND(S))*N,
(-W1/2+(P1*SIND(S))+(S8*COSND(S))*N);
end;
DSEN((S6+LL1/2-(S5*COSND(S))*N,(-W1/2+(S5*SIND(S))*N,
(LL1-K1+(2*G))*N,(-10*10/A)*N);

YOH1=(S6+LL1/2-(MAS*10*COSND(S)/A)+SS6*SIND(S))*N;
YOV1=(-W1/2+(MAS*10*SIND(S)/A)+SS6*COSND(S))*N;
PH(YOH1,YOV1);
for P1=0 step (2*MAS*10/A) until (S5-MAS*10/A) do
begin
DSEN(YOH1-(P1*COSND(S))*N,YOV1+(P1*SIND(S))*N,
YOH1+(-P1*COSND(S)+SS4*SIND(S))*N,
YOV1+(P1*SIND(S)+SS4*COSND(S))*N);
end;
if S=90 then go to HHE;
PH((G+(S22*COSND(S))+(LL1/2+K1))*N,(-2*K1+(S22*SIND(S))*N);
for P1=0 step (2*MAS*10/A) until S22 do
begin
DSEN((G+(S22*COSND(S))+(LL1/2+K1)-(P1*COSND(S))*N,
(-(2*K1+(S22*SIND(S)))+(P1*SIND(S))*N,
(G+(S22*COSND(S))+(LL1/2+K1)-(P1*COSND(S))+(LL1/2-2*K1))*N,
(-(2*K1+(S22*SIND(S)))+(P1*SIND(S))*N);
end;
YOH1=(G+S22*COSND(S)+LL1/2-MAS*10/A*COSND(S)+SSS1)*N;
YOV1=(-2*K1+S22*SIND(S)-MAS*10/A*SIND(S))*N;
PH(YOH1,YOV1);
for P1=0 step (2*MAS*10/A) until (S22-MAS*10/A) do
begin
DSEN(YOH1-(P1*COSND(S))*N,YOV1+(P1*SIND(S))*N,
YOH1+(-P1*COSND(S)+SS4)*N,YOV1+(P1*SIND(S))*N);
end;
HHE:
PH((S6+LL1/2)*N,(-W1/2)*N);
for P1=2*MAS*10/A step (2*MAS*10/A) until S5 do
begin
DSEN((S6+LL1/2+(P1*COSND(S))*N,(-W1/2-(P1*SIND(S))*N,
(S6+LL1/2+(P1*COSND(S))+(S8*SIND(S))*N,
(-W1/2-(P1*SIND(S))+(S8*COSND(S))*N);
end;
DSEN((S6+LL1/2+(S5*COSND(S))*N,(-W1/2-(S5*SIND(S))*N,
(S6+LL1/2+(S5*COSND(S))+(S8*SIND(S))*N,
(-W1/2-(S5*SIND(S))+(S8*COSND(S))*N);
PH((S6+LL1/2+((MAS*COSND(S))*10/A))*N,
(-W1/2-((MAS*SIND(S))*10/A))*N);
for P1=0 step (2*MAS*10/A) until (S5-(MAS*10/A)) do
begin
DSEN((S6+LL1/2+((MAS*COSND(S))*10/A)+(P1*COSND(S))*N,
(-W1/2-(MAS*SIND(S))*10/A-(P1*SIND(S))*N,
(S6+LL1/2+(MAS*COSND(S))*10/A+(P1*COSND(S))+(SS7*SIND(S))*N,
(-W1/2-(MAS*SIND(S))*10/A-(P1*SIND(S))+(SS7*COSND(S))*N);
end;
if S=90 then go to HHHE;
YOH1=(S6+LL1/2+(S5-S3)*COSND(S))*N;
YOV1=(-W1/2-(S5-S3)*SIND(S))*N;
PH(YOH1,YOV1);
for P1=0 step (2*MAS*10/A) until S22 do
begin
DSEN(YOH1+(P1*COSND(S))*N,YOV1-P1*SIND(S)*N,
YOH1+(P1*COSND(S)+LL1/2-2*K1)*N,YOV1-(P1*SIND(S))*N);
end;
YOH1=(S6+LL1/2+(S5-S3)*COSND(S)+(MAS*10/A)*COSND(S))*N;
YOV1=(-W1/2-(S5-S3)*SIND(S)-(MAS*10/A)*SIND(S))*N;
PH(YOH1,YOV1);

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for P1=0 step (2*MAS*10/A) until (S22-MAS*10/A) do
begin
DSEN(YOH1+(P1*COSND(S))*N,YOV1-(P1*SIND(S))*N,
YOH1+(P1*COSND(S)+(SSS1+SS3))*N,YOV1-(P1*SIND(S))*N);
end;
HHHE:
PM((LL1/2+G5)*N,(-10*10/A)*N);
for P1=0 step (HAS*10/A) until (LL1/2-K1) do
begin
DSEN((LL1/2+G5+P1)*N,(-10*10/A)*N,
(LL1/2+G5+P1+(S9*COSND(S)))*N,
((-10*10/A)-(S9*SIND(S)))*N);
end;
PM((S6+LL1/2)*N,(-W1/2)*N);
for X=0 step (HHAS*10/A) until (LL1/2-K1) do
begin
DSEN((LL1/2+S6+X)*N,(-W1/2)*N,
(LL1/2+S6+X+(S9*COSND(S)))*N,
(-W1/2-(S9*SIND(S)))*N);
end;
PP1=P1;
YOH=(S6+LL1/2)*N; YOV=(-W1/2)*N;
PM(YOH,YOV); P(YOH+LL1/4*N,YOV); PM(YH+(LL1/4+2)*N,YOV);

P(YOH+(LL1/4+4)*N,YOV); PM(YOH+(LL1/4+6)*N,YOV);
P(YOH+LL1/2*N,YOV); PM(YOH-LL1/2*N,YOV);
P(YOH-LL1/4*N,YOV); PM(YOH-(LL1/4-2)*N,YOV);
P(YOH-(LL1/4-4)*N,YOV); PM(YOH-(LL1/4-6)*N,YOV);
P(YOH,YOV); PM(YOH-LL1/2*N,YOV);
PM((LL1/2)*N,0); P((LL1/2)*N,10*N);
YASEN(N,(LL1/2)*N,9.5*N,(LL1/2-HU3/A)*N,9.5*N);
PM((LL1/2-HU3/A)*N,10*N); P((LL1/2-HU3/A)*N,0);
PM((LL1/2-HU3/A-HU4/A)*N,0); P((LL1/2-HU3/A-HU4/A)*N,10*N);
YASEN(N,(LL1/2-HU3/A-HU4/A)*N,9.5*N,0,9.5*N);
PM(0,10*N); P(0,0); HG(-2*N,10*N,N,50);
HG((K1+15)*N,10*N,N,HU1); KAKE((K1+17)*N,10*N,N);
HG((K1+18)*N,10*N,N,HU2); EKORU((K1+22)*N,10*N,N);
HG((K1+23)*N,10*N,N,HU3);
if HU4=0 then go to HE2;
HG(0,10*N,N,HU4);
HE2:
if S=90 then go to HEX;
PM((LL1/2+G)*N,-K1*N); P((LL1/2+G)*N,10*N);
HEX:
YASEN(N,(LL1/2+G)*N,9.5*N,(LL1/2+G+HU3/A)*N,9.5*N);
PM((LL1/2+G+HU3/A)*N,10*N); P((LL1/2+G+HU3/A)*N,-K1*N);
PM((LL1/2+G+HU3/A+HU4/A)*N,10*N);
P((LL1/2+G+HU3/A+HU4/A)*N,-K1*N);
YASEN(N,(LL1/2+G+HU3/A+HU4/A)*N,9.5*N,(LL1+G)*N,9.5*N);
PM((LL1+G)*N,10*N); P((LL1+G)*N,-K1*N);
HG((LL1/2+15)*N,10*N,N,HU1); KAKE((LL1/2+17)*N,10*N,N);
HG((LL1/2+18)*N,10*N,N,HU2); EKORU((LL1/2+22)*N,10*N,N);
HG((LL1/2+23)*N,10*N,N,HU3);
if HU4=0 then go to HE4;
HG((LL1/2+HU3/A-1)*N,10*N,N,HU4);
HE4:
HG((LL1/2+HU3/A+HU4/A+0.5)*N,10*N,N,50);
PM(0,0); P(-30*N,0); YASEN(N,-29.5*N,0,-29.5*N,-W1*N);
PM(-30*N,-W1*N); P(WL1*N,-W1*N); PM(-19.5*N,0);
YASEN(N,-19.5*N,0,-19.5*N,-DX*N);
PM(-20*N,-DX*N); P(G3*N,-DX*N);
VG(-20*N,(-DX+0.5)*N,N,350); PM(-19.5*N,-DX*N);
YASEN(N,-19.5*N,-DX*N,-19.5*N,-(DX+W2)*N);
PM(-20*N,-(DX+W2)*N);
P((WL1-G3)*N,-(DX+W2)*N); PM(-19.5*N,-(DX+W2)*N);
YASEN(N,-19.5*N,-(DX+W2)*N,-19.5*N,-W1*N);
VG(-29.8*N,(-W1/2)*N,N,WL1*1000);
VG(-19.8*N,(-W1/2)*N,N,W*1000);
VG(-20*N,(-W1+0.5)*N,N,350);
PM((WL1+LL1/2-G5)*N,(-W1+2*K1-K1)*N);
P((WL1+LL1/2-G5)*N,(-W1+2*K1-5)*N);
YASEN(N,(WL1+LL1/2-G5)*N,(-W1+2*K1-4.5)*N,
(WL1+LL1/2+HL3/A)*N,(-W1+2*K1-4.5)*N);
PM((WL1+LL1/2+HL3/A)*N,(-W1+2*K1-5)*N);

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P((WL1+LL1/2+HL3/A)*N,(-W1+2*K1-K1)*N);
if HL4=0 then go to HE5;
PM((WL1+LL1/2+HL3/A+HL4/A)*N,(-W1+2*K1)*N);
P((WL1+LL1/2+HL3/A+HL4/A)*N,(-W1+2*K1-5)*N);
YASEN(N,(WL1+LL1/2+HL3/A)*N,(-W1+2*K1-4,5)*N,
(WL1+LL1/2+HL3/A+HL4/A)*N,(-W1+2*K1-4,5)*N);
HG((WL1+LL1/2+HL3/A-1)*N,(-W1+2*K1-4,2)*N,N,HL4);
HE5:
HG((WL1+LL1/2+5)*N,(-W1+2*K1-4,2)*N,N,HL1);
KAKE((WL1+LL1/2+8)*N,(-W1+2*K1-4,2)*N,N);
HG((WL1+LL1/2+9)*N,(-W1+2*K1-4,2)*N,N,HL2);
EKORU((WL1+LL1/2+13)*N,(-W1+2*K1-4,2)*N,N);
HG((WL1+LL1/2+14)*N,(-W1+2*K1-4,2)*N,N,HL3);
C((LL1/4)*N,14*N,N); BAR((LL1/4+3)*N,14*N,N);
C((LL1/4+7)*N,14*N,N);
DD((LL1*3/4)*N,14*N,N); BAR((LL1*3/4+3)*N,14*N,N);
DD((LL1*3/4+7)*N,14*N,N);
E((WL1+LL1*3/4)*N,(-W1-10)*N,N);
BAR((WL1+LL1*3/4+3)*N,(-W1-10)*N,N);
E((WL1+LL1*3/4+7)*N,(-W1-10)*N,N);
if S=90 then go to HE7;
PM(0,0); P((-15*SIND(S))*N,(-15*COSND(S))*N);
YASEN(N,(-14,5*SIND(S))*N,(-14,5*COSND(S))*N,
(WL1-14,5*SIND(S))*N,(-W1-14,5*COSND(S))*N);
PM((WL1-15*SIND(S))*N,(-W1-15*COSND(S))*N);
P(WL1*N,-W1*N); YOH1=(350/SIND(S))/A;
YASEN(N,(-4,5*SIND(S))*N,(-4,5*COSND(S))*N,
(-4,5*SIND(S)+YOH1*COSND(S))*N,
(-4,5*COSND(S)-YOH1*SIND(S))*N);
PM((-5*SIND(S)+YOH1*COSND(S))*N,
(-5*COSND(S)-YOH1*SIND(S))*N);
P((YOH1*COSND(S))*N,(-YOH1*SIND(S))*N);
SN1=(-4,5*SIND(S)+YOH1*COSND(S))*N;
SN2=(-4,5*COSND(S)-YOH1*SIND(S))*N;
YASEN(N,SN1,SN2,(WL1-YOH1*COSND(S)-4,5*SIND(S))*N,
(-W1+YOH1*SIND(S)-4,5*COSND(S))*N);
PM((WL1-YOH1*COSND(S)-5*SIND(S))*N,(-W1+YOH1*SIND(S)-
5*COSND(S))*N);
P((WL1-YOH1*COSND(S))*N,(-W1+YOH1*SIND(S))*N);
YASEN(N,(WL1-YOH1*COSND(S)-4,5*SIND(S))*N,
(-W1+YOH1*SIND(S)-4,5*COSND(S))*N,
(WL1-4,5*SIND(S))*N,(-W1-4,5*COSND(S))*N);
AG((WL1/2-20*SIND(S))*N,(-W1/2)*N,N,WL*1000/SIND(S),180+S);
AG((-5,5*SIND(S)+YOH1*COSND(S))*N,(-5,5*COSND(S)-
YOH1*SIND(S))*N,N,350/SIND(S),180+S);
AG((WL1/2-7*SIND(S))*N,(-W1/2)*N,N,WL*1000/SIND(S),180+S);
AG((WL1-5*SIND(S))*N,(-W1-5*COSND(S))*N,N,350/SIND(S),
180+S);

PM((G1+K1)*N,(-W1+K1*2)*N);
YOH=(G1+K1-(YL1/2)*COSND(S))*N;
YOV=(-W1+K1*2+(YL1/2)*SIND(S))*N;
PM(YOH,YOV);
for P1=0 step YAS1 until YL1 do
begin
PM(YOH+P1*N,YOV);
KYASEN(N,YOH+P1*N,YOV,YOH+(P1+YAS1)*N,YOV);
end;
KYASEN(N,YOH+YL1*N,YOV,YOH+(YL1+8)*N,YOV);
EENN(YOH*(YL1+7)*N,YOV+1,5*N,N,10);
EENN((G1+K1+YL1/2+8*COSND(S)+4)*N,
(-W1+K1*2-8*SIND(S)+1,5)*N,N,11);
PM((G1+K1+YL1/2+8*COSND(S)+5)*N,(-W1+K1*2-8*SIND(S))*N);
P((G1+K1+YL1/2+8*COSND(S))*N,(-W1+K1*2-8*SIND(S))*N);
KYASEN(N,(G1+K1+YL1/2)*N,(-W1+K1*2)*N,
(G1+K1+YL1/2+8*COSND(S))*N,
(-W1+K1*2-8*SIND(S))*N);
YOH=(G1+K1+YL1/2)*N;
YOV=(-W1+K1*2)*N;
for P1=0 step YAS1 until YL1-YAS1 do

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begin
  PM(YOH-P1*COSND(S)*N,YOV+P1*SIND(S)*N);
  KYASEN(N,YOH+(-P1*COSND(S)-YAS1*COSND(S))*N,
    YOV*(P1*SIND(S)+YAS1*SIND(S))*N,
    YOH-P1*COSND(S)*N,YOV+P1*SIND(S)*N);
end;
KYASEN(N,YOH-YL1*COSND(S)*N,YOV+YL1*SIND(S)*N,
  YOH-P1*COSND(S)*N,YOV+P1*SIND(S)*N);

HE7:
YOH=(G*2+S22*COSND(S)+LL1)*N;
YOV=(-2*K1+S22*SIND(S))*N;
PM(YOH,YOV); P(YOH+5*N,YOV);
YASEN(N,YOH+4.5*N,YOV,YOH*(4.5-(SSY3/A)*COSND(S))*N,
  YOV*((SSY3/A)*SIND(S))*N);
PM(YOH*(5.0-(SSY3/A)*COSND(S))*N,YOV*((SSY3/A)*SIND(S))*N);
P(YOH+(-(SSY3/A)*COSND(S))*N,YOV*((SSY3/A)*SIND(S))*N);
AG(YOH*(4.0-5*COSND(S))*N,YOV*(5*SIND(S))*N,N,SSY1,180+S);
XX(180+S,SS);
AG(YOH*(4.0-9*COSND(S))*N,YOV*(9*SIND(S))*N,N,SSY2,180+S);
EK(180+S,SS);
AG(YOH*(4.0-16*COSND(S))*N,YOV*(16*SIND(S))*N,N,SSY3,180+S);
if SSY4=0 then go to HE8;
PM(YOH*(5.0-(SSY3/A+SSY4/A)*COSND(S))*N,
  YOV*((SSY3/A+SSY4/A)*SIND(S))*N);
P(YOH-(SSY3/A+SSY4/A)*COSND(S)*N,
  YOV*(SSY3/A+SSY4/A)*SIND(S)*N);
AG(YOH*(8.0-(SSY3/A)*COSND(S))*N,
  YOV*((SSY3/A-1)*SIND(S))*N,N,SSY4,180+S);
HE8:

PM((LL1+G)*N,-K1*N); P((LL1+G+5)*N,-K1*N);
YOH=(50/SIND(S))/A;
YOV=-YOH*SIND(S); YOH=YOH*COSND(S);
YASEN(N,(LL1+G+4.5)*N,-K1*N,(LL1+4.5+G+YOH)*N,(-K1+YOV)*N);
AG((LL1+9)*N,(-K1)*N,N,50,180+S);

PM((S6+LL1/2)*N,(-W1/2)*N);
P((S6+LL1/2-5*SIND(S))*N,(-W1/2-5*COSND(S))*N);
YASEN(N,(S6+LL1/2-4.5*SIND(S))*N,(-W1/2-4.5*COSND(S))*N,
  (S6+LL1/2-4.5*SIND(S)-(KM3/A)*COSND(S))*N,
  (-W1/2-4.5*COSND(S)+(KM3/A)*SIND(S))*N);
PM((S6+LL1/2-5*SIND(S)-(KM3/A)*COSND(S))*N,
  (-W1/2-5*COSND(S)+(KM3/A)*SIND(S))*N);
P((S6+LL1/2-(KM3/A)*COSND(S))*N,(-W1/2+(KM3/A)*SIND(S))*N);
YOH1=(S6+LL1/2-5*SIND(S))*N;
YOV1=(-W1/2-5*COSND(S))*N;
AG(YOH1-((KM3/A)*2/5)*COSND(S)*N,YOV1+((KM3/A)*2/5)*SIND(S)
  *N,N,KM1,180+S);
XX(180+S,SS);
AG(YOH1-((KM3/A)*2/5+4)*COSND(S)*N,YOV1+((KM3/A)*2/5+4)*
  SIND(S)*N,N,KM2,180+S);
EK(180+S,SS);
AG(YOH1-((KM3/A)*2/5+10)*COSND(S)*N,YOV1+((KM3/A)*2/5+10)*
  SIND(S)*N,N,KM3,180+S);
if KM4=0 then go to HE9;
YOH=(S6+LL1/2-(KM3/A+KM4/A)*COSND(S))*N;
YOV=(-W1/2+(KM3/A+KM4/A)*SIND(S))*N;
PM(YOH,YOV); P(YOH-5*SIND(S)*N,YOV-5*COSND(S)*N);
YASEN(N,YOH-4.5*SIND(S)*N,YOV-4.5*COSND(S)*N,
  YOH*(4.5*SIND(S)-KM4*COSND(S)/A)*N,
  YOV*(-4.5*COSND(S)-KM4*SIND(S)/A)*N);
AG(YOH-(5*SIND(S)-KM4*COSND(S)/A)*N,
  YOV*(-5*COSND(S)-KM4*SIND(S)/A)*N,N,KM4,180+S);
HE9:
YOH=(S6+LL1/2-4.5*SIND(S))*N;
YOV=(-W1/2-4.5*COSND(S))*N;
PM(YOH,YOV); YASEN(N,YOH,YOV,YOH*(SSY3*COSND(S)/A)*N,
  YOV-(SSY3*SIND(S)/A)*N);
PM((S6+LL1/2+SSY3*COSND(S)/A)*N,(-W1/2-SSY3*SIND(S)/A)*N);
P((S6+LL1/2+(SSY3*COSND(S)/A)-5*SIND(S))*N,
  (-W1/2+(-SSY3*SIND(S)/A)-5*COSND(S))*N);
YOH=(S6+LL1/2-5*SIND(S))*N; YOV=(-W1/2-5*COSND(S))*N;
AG(YOH*(50*COSND(S)+0.5)*N,YOV=50*SIND(S)*N,N,SSY1,180+S);

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XX(180+S,SS);
AG(YOH*(45*COSND(S)+0.5)*N,YOV=45*SIND(S)*N,N,SSY2,180+S);
EK(180+S,SS);
AG(YOH*(38*COSND(S)+0.5)*N,YOV=38*SIND(S)*N,N,SSY3,180+S);
if SSY4=0 then go to HE10;
YOH=(S6+LL1/2+(SSY3/A+SSY4/A)*COSND(S))*N;
YOV=(-W1/2-(SSY3/A+SSY4/A)*SIND(S))*N;
PM(YOH,YOV); P(YOH=5*SIND(S)*N,YOV=5*COSND(S)*N);
YASEN(N,YOH=4.5*SIND(S)*N,YOV=4.5*COSND(S)*N,
      YOH=(-4.5*SIND(S)-SSY4*COSND(S)/A)*N,
      YOV=(-4.5*COSND(S)+SSY4*SIND(S)/A)*N);
AG(YOH=(5*SIND(S)-0.5)*N,YOV=(-5*COSND(S)-1)*N,N,SSY4,180+S);
HE10:
YOH=(S6+G+LL1+(S5-S3)*COSND(S))*N; YOV=(-W1+(S22+2*F1)*SIND(S))*N;
PM(YOH,YOV); P(YOH=5*N,YOV);
YASEN(N,YOH=4.5*N,YOV,YOH*(4.5*KMM3*COSND(S)/A)*N,
      YOV*(KMM3*SIND(S)/A)*N);
PM(YOH*(5*KMM3*COSND(S)/A)*N,YOV*(KMM3*SIND(S)/A)*N);
P(YOH*(KMM3*COSND(S)/A)*N,YOV*(KMM3*SIND(S)/A)*N);
YOH=YOH+(5*KMM3*COSND(S)/A)*N;
YOV=YOV-(KMM3*SIND(S)/A)*N;
AG(YOH=(5*COSND(S)+0.7)*N,YOV=5*SIND(S)*N,N,KMM1,180+S);
XX(180+S,SS);
AG(YOH=(9*COSND(S)+0.7)*N,YOV=9*SIND(S)*N,N,KMM2,180+S);
EK(180+S,SS);
AG(YOH=(15*COSND(S)+0.7)*N,YOV=15*SIND(S)*N,N,KMM3,180+S);
PM((LL1+G1+G)*N,(-WWL+2*K1)*N); P((LL1+G1+G+5)*N,(-WWL+2*K1)*N);
AG((LL1+G1+G+8)*N,(-WWL+K1)*N,N,50,180+S);
PM((LL1+G1)*N,(-WWL+3*K1)*N); P((LL1+G1+5)*N,(-WWL+3*K1)*N);
YASEN(N,(LL1+G1+G+4.5)*N,(-WWL+2*K1)*N,
      (LL1+G1+4.5)*N,(-WWL+3*K1)*N);
if KMM4=0 then go to HE11;
AG((LL1+G1+G+8)*N,(-WWL+3*K1)*N,N,KMM4,180+S);
HE11:
if S=90 then
begin
PM(LL1*N,(-W1/2)*N); P((LL1+5)*N,(-W1/2)*N);
YASEN(N,(LL1+4.5)*N,(-W1/2)*N,(LL1+4.5)*N,(-W1/2+SSY3/A)*N);
PM((LL1+5,0)*N,(-W1/2+SSY3/A)*N); P(LL1*N,(-W1/2+SSY3/A)*N);
if SSY4=0 then go to E12;
PM(LL1*N,(-W1/2+SSY3/A+SSY4/A)*N); P((LL1+5)*N,(-W1/2+SSY3/A+SSY4/A)*N);
E12:
PM(LL1*N,-K1*N); P((LL1+5)*N,-K1*N);
YASEN(N,(LL1+4.5)*N,-K1*N,(LL1+4.5)*N,(-K1*2)*N);
YOH=(LL1+4.2)*N; YOV=(-W1/2+W1/8)*N;
VG(YOH,YOV,N,SSY1); XX(180+S,SS);
VG(YOH,YOV+4*N,N,SSY2); EK(180+S,SS);
VG(YOH,YOV+11*N,N,SSY3);
if SSY4=0 then go to HE13;
VG((LL1+7)*N,(-W1/2+SSY3/A-1)*N,N,SSY4);
HE13:
VG((LL1+7)*N,(-2*K1)*N,N,50);
PM(LL1*N,(-W1/2)*N);
YASEN(N,(LL1+4.5)*N,(-W1/2)*N,(LL1+4.5)*N,(-W1/2+KMM3/A)*N);
PM((LL1+5,0)*N,(-W1/2+KMM3/A)*N); P(LL1*N,(-W1/2+KMM3/A)*N);
if KMM4=0 then go to HE14;
PM(LL1*N,(-W1/2+KMM3/A+KMM4/A)*N); P((LL1+5)*N,(-W1/2+KMM3/A+KMM4/A)*N);
HE14:
PM((LL1+5)*N,(-W1+K1)*N); P(LL1*N,(-W1+K1)*N);
YASEN(N,(LL1+4.5)*N,(-W1+K1)*N,(LL1+4.5)*N,(-W1+2*K1)*N);
YOV=(-W1+W1/8)*N;
VG(YOH,YOV,N,KMM1); XX(180+S,SS);
VG(YOH,YOV+4*N,N,KMM2); EK(180+S,SS);
VG(YOH,YOV+11*N,N,KMM3);
if KMM4=0 then go to HE15;
VG((LL1+7)*N,(-W1/2+KMM3/A+2)*N,N,KMM4);
HE15:
VG((LL1+7)*N,(-W1+2)*N,N,50);
end;
PRINTS('***HEIMENZU**OWARI'); CRLF(10);
end;

```

```

READ(SP,SPP,FU,ZFU,SKEW,D,MA,HA,H,YA,Y,S1,S2,S3,S4,SS1,SS2,SS3,SS4,K1,K2,K3,K4,
    KK1,KK2,KK3,KK4,H1,H2,H3,H4,HH1,HH2,HH3,HH4,Y1,Y2,Y3,Y4,SIZE);
if SP=0 then go to OWARI;
PMOVE(40*SIZE,170*SIZE); PREADY(0,0);
HEIMENZU(SP,SPP,FU,ZFU,SKEW,D,MA,HA,H,YA,Y,S1,S2,S3,S4,SS1,SS2,SS3,SS4,K1,K2,K3,K4,
    KK1,KK2,KK3,KK4,H1,H2,H3,H4,HH1,HH2,HH3,HH4,Y1,Y2,Y3,Y4,SIZE);
PMOVE(-40*SIZE,-170*SIZE); PREADY(0,0);
OWARI:
end;

```