DEPARTMENT FOR CURRICULUM,
LIFELONG LEARNING AND EMPLOYABILITY
Directorate for Learning and Assessment Programmes
Educational Assessment Unit

**Annual Examinations for Secondary Schools 2020**

**YEAR 11** **GRAPHICAL COMMUNICATION** **TIME: 2 hours**

Instructions

- Write your name and class on all sheets.
- Attempt ALL questions.
- All answers are to be drawn accurately with instruments, unless otherwise stated.
- All construction lines MUST be left on each solution to show the method employed.
- Drawing aids may be used.

Information

- All dimensions are in millimetres.
- Estimate any missing dimensions.
- Marks will be awarded for accuracy, clarity and appropriateness of construction.

**This section is for teachers' use only.**

| **Question** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | **Total** |
|---|---|---|---|---|---|---|---|---|
| **Marks allotted** | 14 | 16 | 16 | 13 | 12 | 13 | 16 | 100 |
| **Marks awarded** | | | | | | | | |

Question 1: Circles in contact.

Figure 1 shows a pictorial image of an automatic car transmission gear lever. Draw its profile using the dimensions given in figure 2. Mark at least four points of tangency with short dashes.

(Total:14 marks)

Fig. 1

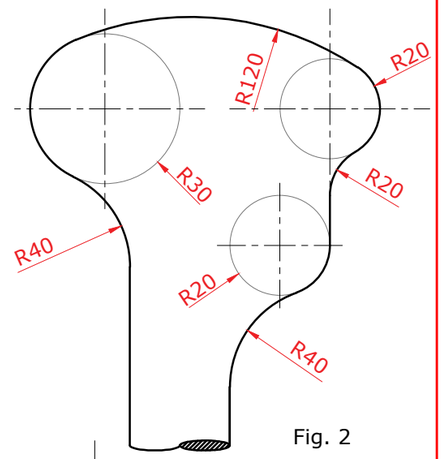



Fig. 2

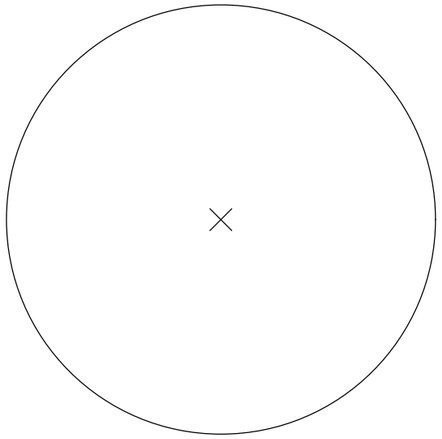
Question 2: Pie chart and Computer graphics.

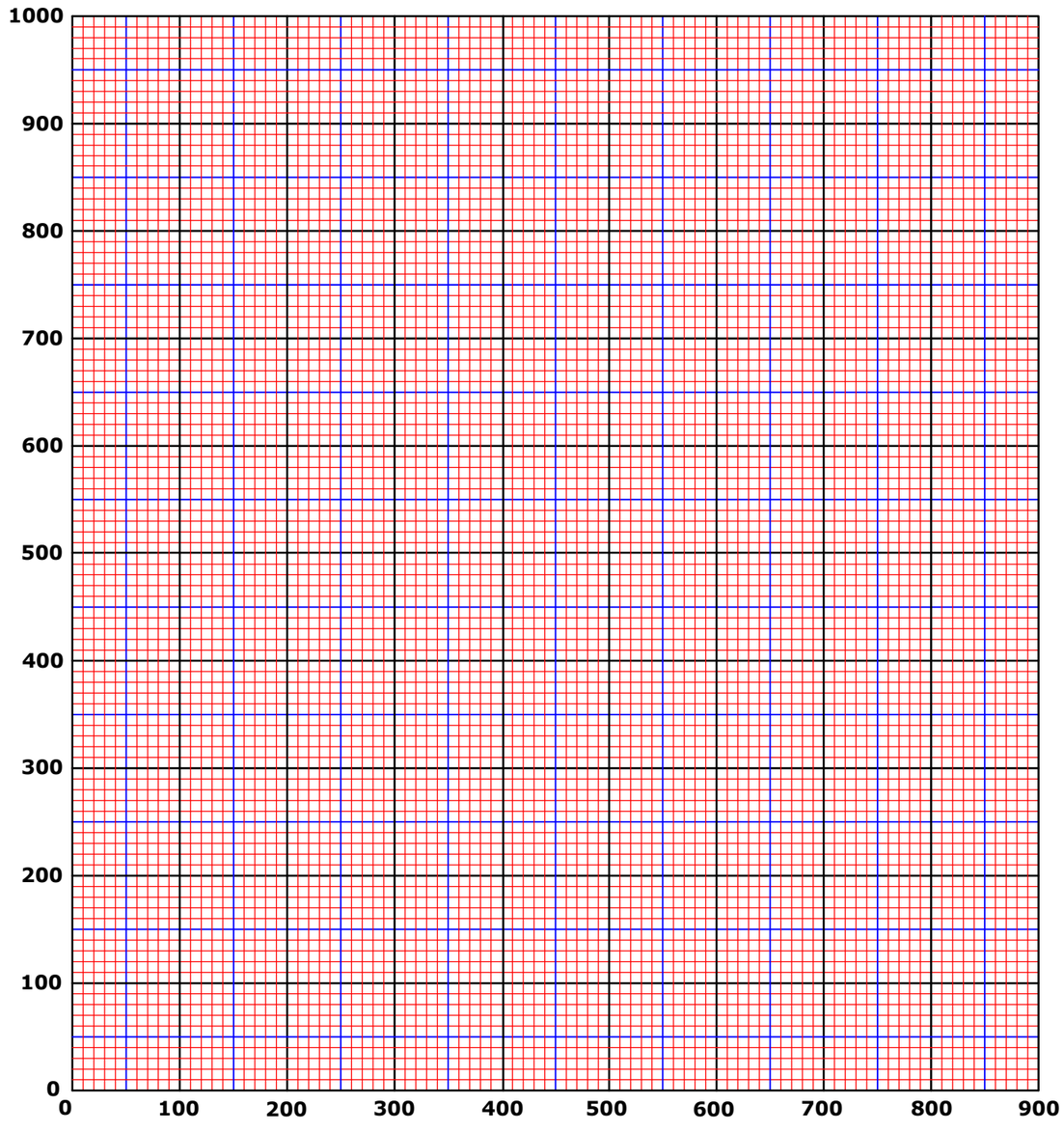
A) Table 1 shows the popularity of computer games amongst children in Malta. Column A lists game types and column B the percentages. Using this data,

a. choose a colour for each game type and fill this in column C,
b. find the corresponding angles and fill these in column D,
c. complete the pie chart in the circle provided,
d. colour the sections in the pie chart to match those in column C.

Table 1

| **Computer game-type popularity** | | | |
|---|---|---|---|
| A | B | C | D |
| Adventure | 25% | | |
| Strategy | 15% | | |
| Action | 35% | | |
| Sports | 15% | | |
| Puzzle | 10% | | |






B) You are required to draw an image using a computer graphics program which uses the instructions DATA, MOVE & DRAW to generate the image in the following way:

DATA: A = 50; B = 100; C = 150; D = 200; E = 250; F = 300; G = 350; H = 400; I = 450; J = 500; K = 550; L = 600; M = 650; N = 700; O = 750; P = 800; Q = 850; R = 900; S = 950; T = 1000.

ACI 5: MOVE B,B; DRAW B,D; DRAW D,F; DRAW L,F; DRAW N,D; DRAW P,D; DRAW P,B; DRAW B,B:
ACI 1: MOVE D,F; DRAW D,H; DRAW F,H; DRAW F,F:
ACI 3: MOVE H,F; DRAW H,N; DRAW F,N; DRAW F,R; DRAW L,R; DRAW L,N; DRAW J,N; DRAW J,F.

The computer responds to the following commands:

| Colour | (ACI) Colour Index Number |
|---|---|
| 1 | Red |
| 3 | Green |
| 5 | Blue |

(Total: 16 marks)

Question 3:  Sectioning.

An illustration of a cast iron support block is shown in figure 3. The plan and the outline of the sectional front elevation are also given.

In the space provided, complete a sectional front elevation on cutting plane M-M.

Notes:

- Show all centre lines.
- Do not show hidden detail.
- All holes are drilled right through.

(Total: 16 marks)

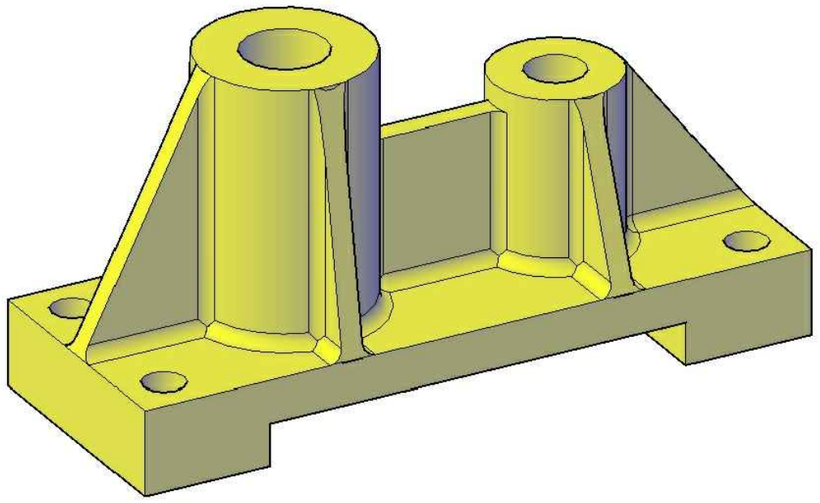
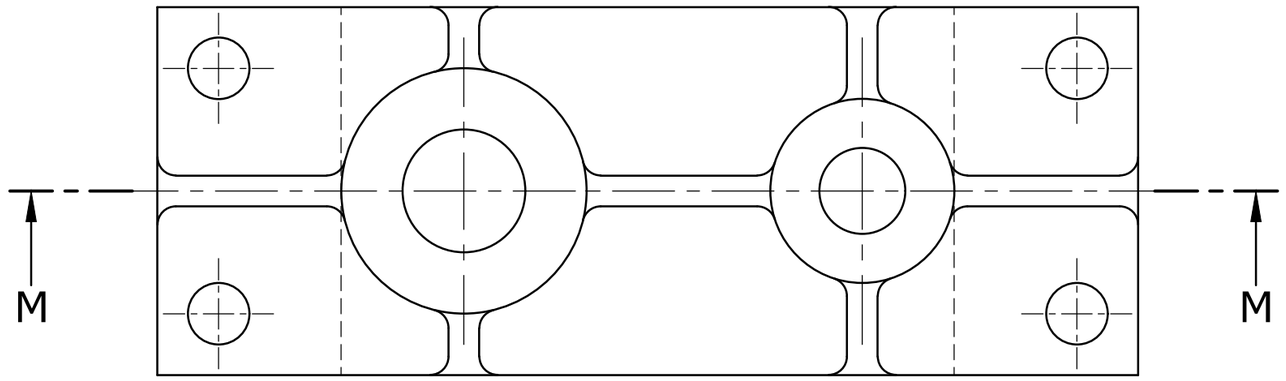
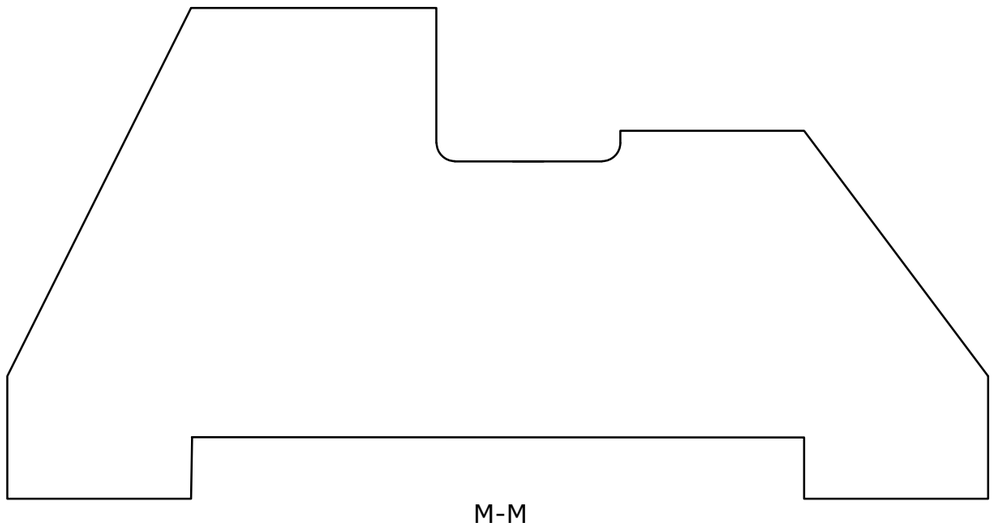


Fig. 3




PLAN



M-M

Question 4:  Intersections.

An illustration of a twin megaphone is shown in figure 4. A plan, an end elevation and an incomplete front elevation are also given.

Construct:

a. the two curves of intersection on the front elevation;
b. half the development of Part A.

(Total: 13 marks)

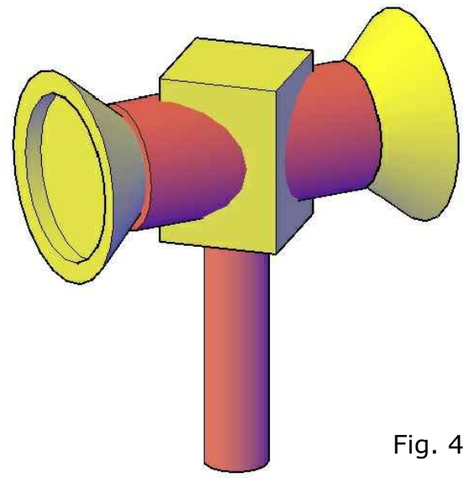
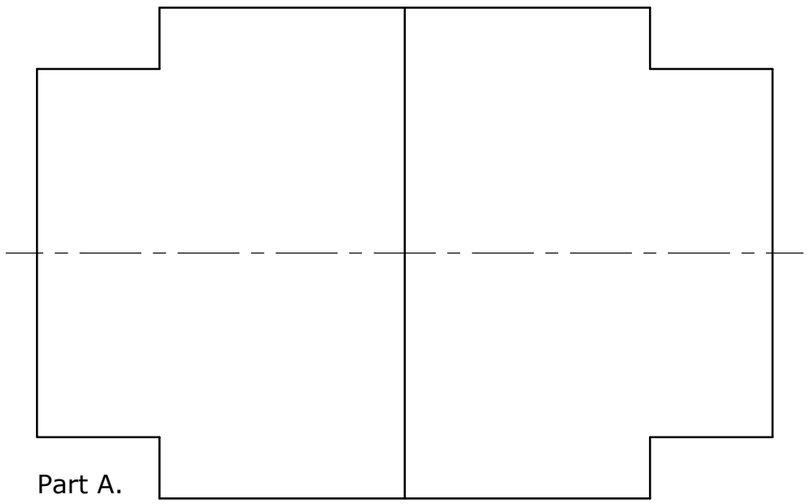
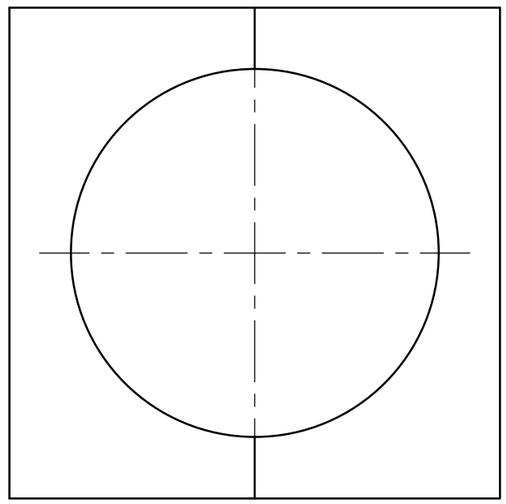


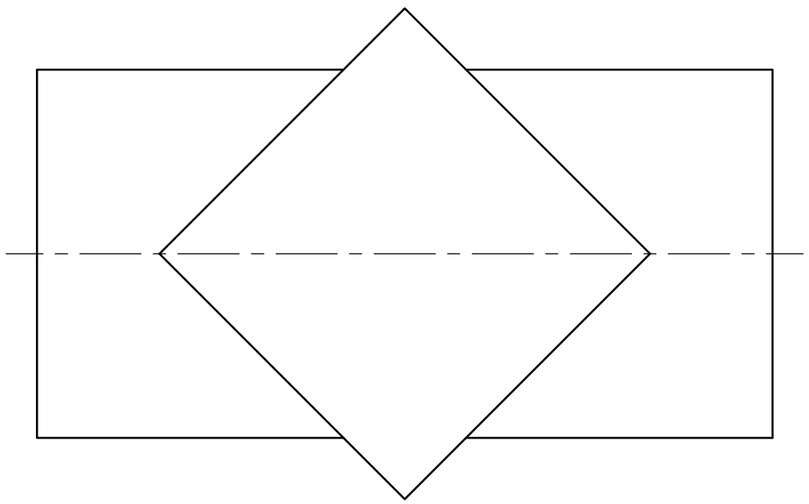
Fig. 4




FRONT ELEVATION



END ELEVATION



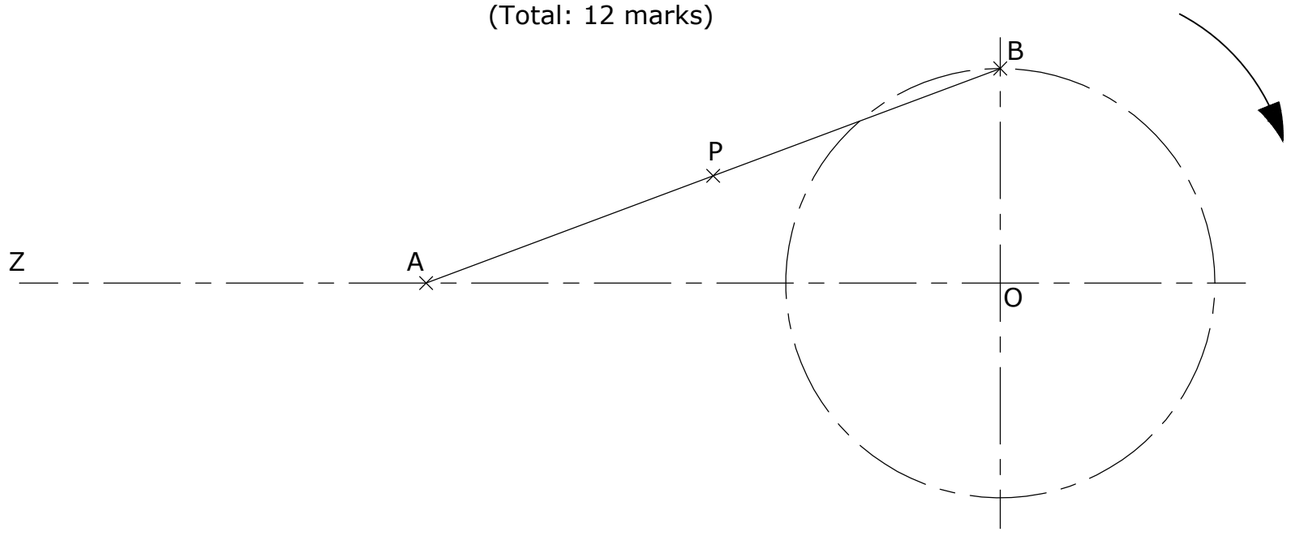
PLAN

Half development of part A.

Question 5: Loci of mechanism.

An illustration of a slider-crank mechanism is shown in figure 5. Plot the locus of point P for one complete revolution of crank OB while point A slides along centre line OZ.

(Total: 12 marks)



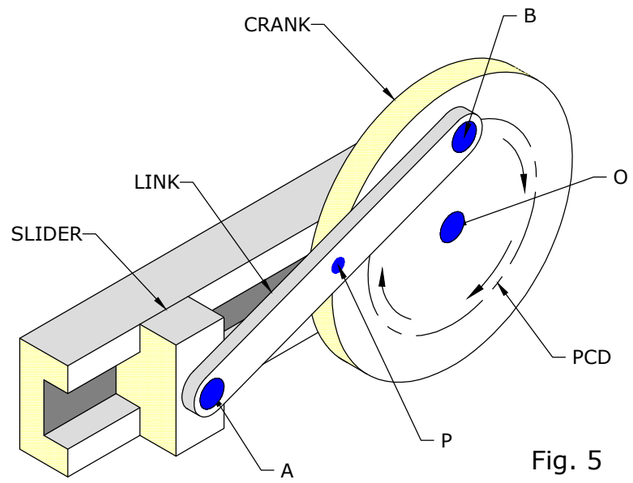




Fig. 5

Question 6: Construction of triangles and squares.

The hypotenuse AB of triangle ABC is given. Construct the shape in figure 6 by using the following information:

1. side BC = 40mm and angle BCA = 90°.
2. square Z having sides equal to AB.
3. square Y having sides equal to BC (perpendiculars to be found by construction).
4. square X having sides equal to CA.

Calculate and list the areas of the three squares.

(Total: 13 marks)

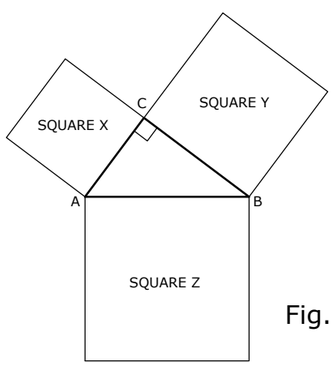



Fig. 6

A _____ B

Area of square X: _____

Area of square Y: _____

Area of square Z: _____

Question 7:  Auxiliary elevations.

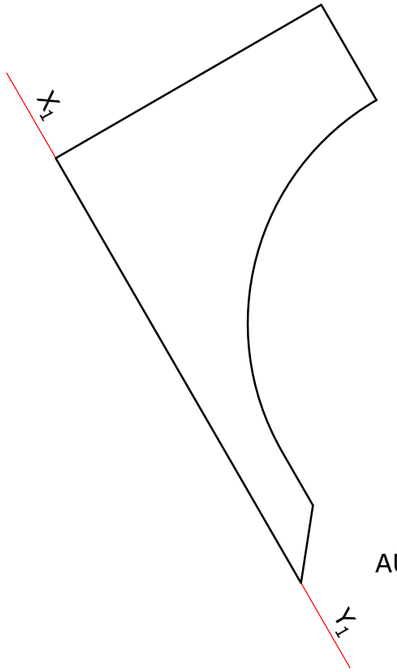
The plan and an auxiliary elevation of a freestyle bike ramp are given. A pictorial illustration of the ramp is shown in figure 7. Using the given start lines, project the front elevation.

Note: Do not show hidden detail.

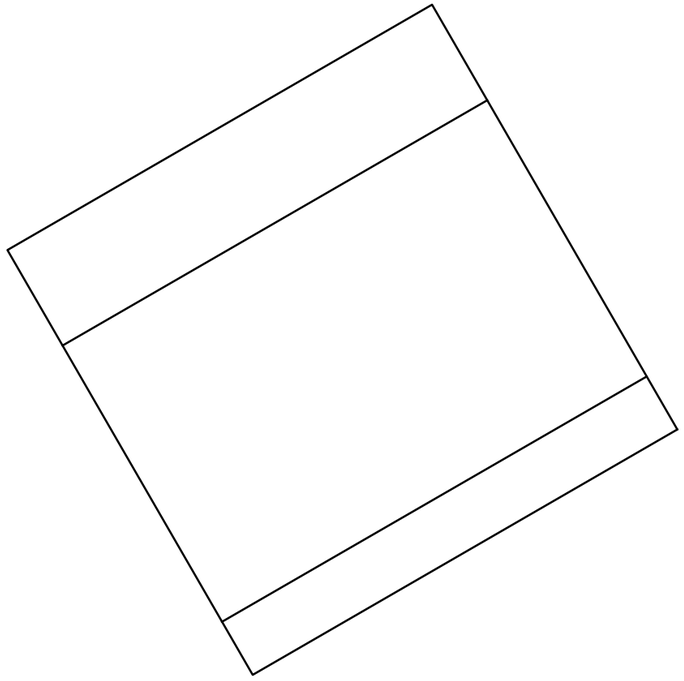
(Total: 16 marks)

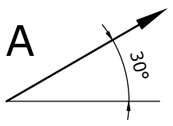
X Y

FRONT ELEVATION




AUXILIARY ELEVATION






PLAN

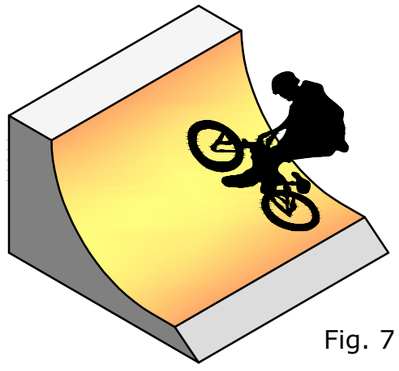


Fig. 7