

MATHEMATICS - ORDINARY LEVEL - PAPER 2 (300 marks)

35649

FRIDAY, 11th JUNE, MORNING - 9.30 to 12.00.

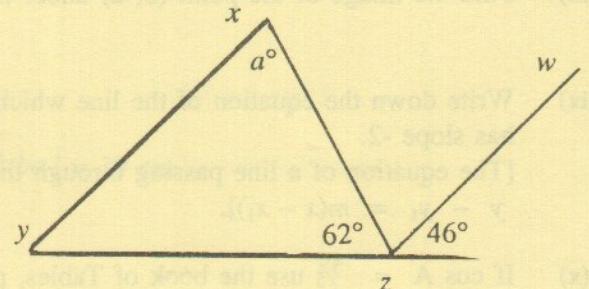
Attempt QUESTION 1 (100 marks) and FOUR other questions (50 marks each).

Marks may be lost if all necessary work is not clearly shown.

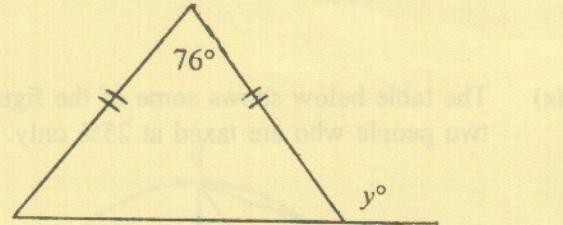
Mathematics Tables may be obtained from the Superintendent.

1. (i) Two angles of a triangle sum to $82^\circ 46'$.
Calculate the measure of the third angle.

- (ii) $xy \parallel wz$.
Calculate the value of a .

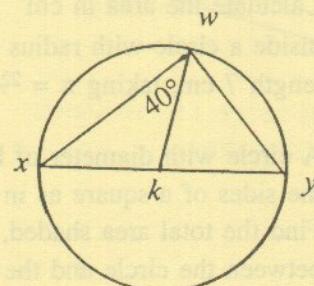


- (iii) Calculate the value of y .



- (iv) Construct accurately the parallelogram abcd in which
 $|ab| = 4.5$ cm, $|bc| = 6.0$ cm and $|\angle abc| = 120^\circ$.
Measure $|bd|$ and give your answer correct to one place of decimals.

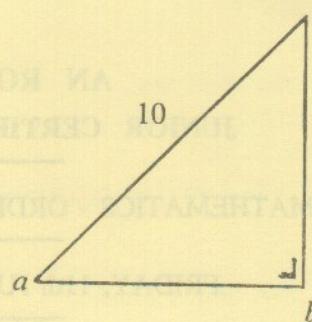
- (v) k is the centre of the circle
and $|\angle xwk| = 40^\circ$.
Calculate $|\angle ykw|$.



- (vi) In the right-angled triangle abc

$$|ab| = |bc|$$

$$\text{and } |ac| = 10.$$

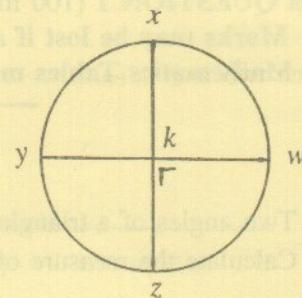


Find $|ab|$.

- (vii) k is the centre of the circle.

[xz] and [yw] are diameters, at right angles to each other.

What is the image of Δykx under axial symmetry in xz ?



- (viii) Find the image of the point $(0, 2)$ under the central symmetry in the point $(1, 4)$.

- (ix) Write down the equation of the line which passes through the point $(3, 5)$ and has slope -2 .

[The equation of a line passing through the point (x_1, y_1) and with slope m is $y - y_1 = m(x - x_1)$].

- (x) If $\cos A = \frac{3}{5}$ use the book of Tables, page 15, to find the value of A , where $A < 90^\circ$.

2.

- (a) The table below shows some of the figures in the calculation of the yearly pay of two people who are taxed at 25% only.

	Gross pay	Total tax-free	Taxable pay	Tax at 25%	Take-home pay
Employee 1	16 000	10 000			14 500
Employee 2	20 000		8000	2000	

Copy the table into your answerbook and fill in the missing figures.

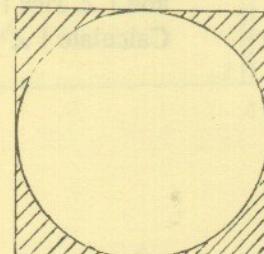
- (b) (i) Calculate the area in cm^2

inside a circle with radius of length 7 cm, taking $\pi = \frac{22}{7}$.

- (ii) A circle with diameter of length 14 cm touches the sides of a square as in the diagram.

Find the total area shaded, between the circle and the square.

Take $\pi = \frac{22}{7}$ if necessary.



3.

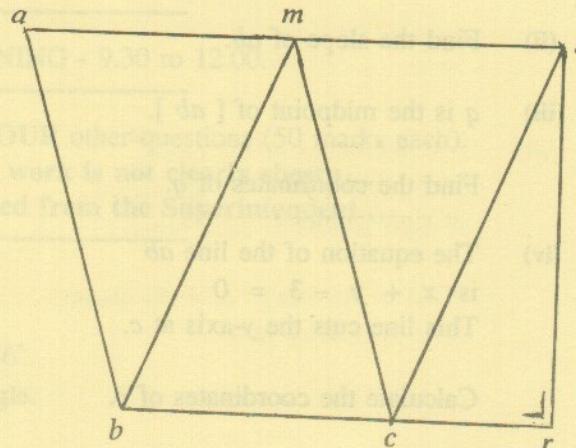
abcm and *mbsc* are

parallelograms.

$$|\angle crs| = 90^\circ.$$

$|\angle am|$ and $|\angle ab|$ are not equal.

- (i) Name two line segments each equal in length to $|\angle am|$.
- (ii) Name two angles each equal in measure to $|\angle mab|$.
- (iii) Give a reason why the area of $\triangle abm$ equals the area of $\triangle mbc$.
- (iv) Name a translation under which $\triangle mcs$ is the image of $\triangle abm$.
- (v) The area of the figure *abrs* is 252 cm^2 . Calculate $|\angle cr|$ if $|\angle rs| = 14^\circ$ and $|\angle bc| = 10^\circ$.



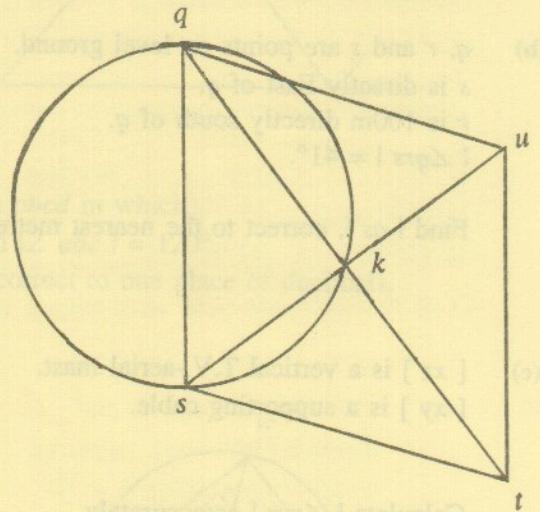
4.

 $[qs]$ is a diameter of the circle.*qstu* is a parallelogram.

$$|\angle qt| = 8^\circ \text{ and } |\angle su| = 6^\circ.$$

The diagonals intersect at *k* on the circle.

- (i) Find $|\angle qk|$ and $|\angle sk|$.
- (ii) Name two angles which are right angles.
- (iii) Find $|\angle qs|$.
- (iv) Say why $\triangle qsk$ and $\triangle qku$ are congruent.
- (v) If $|\angle sqk| = 36^\circ 52'$ find $|\angle quk|$.



5.

$a (3, 0)$ is a point, as in diagram.

- (i) Plot the point $b (1, 2)$.

- (ii) Find the slope of ab .

- (iii) q is the midpoint of $[ab]$.

Find the coordinates of q .

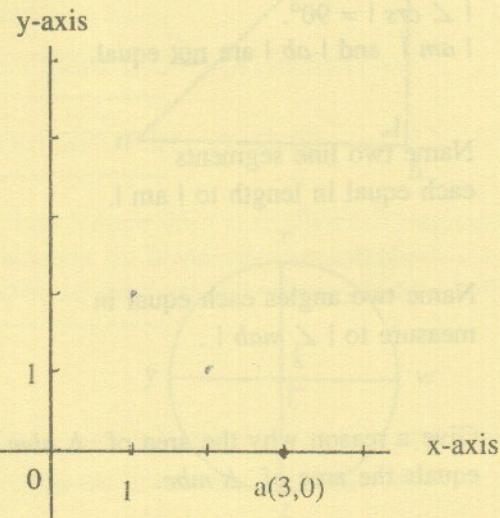
- (iv) The equation of the line ab

$$\text{is } x + y - 3 = 0$$

This line cuts the y -axis at c .

Calculate the coordinates of c .

- (v) Find the area of Δoqc , where o is $(0, 0)$.



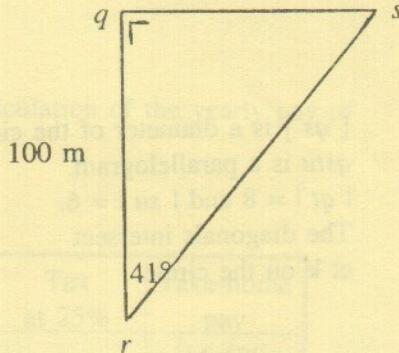
Slope formula :	$\frac{y_2 - y_1}{x_2 - x_1}$
Midpoint formula :	$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

6.

- (a) Find $\cos 22^\circ 36'$ using the book of Tables, page 14.

- (b) q, r and s are points on level ground.
 s is directly East of q .
 r is 100m directly south of q .
 $|\angle qrs| = 41^\circ$.

Find $|qs|$, correct to the nearest metre.



- (c) $[xz]$ is a vertical T.V.-aerial mast.
 $[xy]$ is a supporting cable.

Calculate $|\angle xyz|$ as accurately as the tables allow.

