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- 1 In a tournament, one match is played each day for four days.
The same number of adults and children watch the match each day at the stadium.
The total entrance fee received for the match on day one is M164 000.

- (a) 12.5% of the total entrance fee collected on day one is used to make tickets for the next matches.

Calculate the amount used for making the tickets.

M..... [2]

- (b) For the **next** three matches, the total entrance fee increases by 2% per match.

Calculate the total entrance fee received for the matches.

M..... [3]

- (c) Day one match had spectators in the ratio
Men : Women = 4 : 3 and Women : Children = 5 : 2.

- (i) Calculate the ratio of men : women : children.

..... : : [3]

- (ii) The total entrance fee from children is M24 000.

Calculate the entrance fee from men.

M..... [3]

- 2 The diagram shows patterns of dots which form a sequence.



Pattern 1

Pattern 2

Pattern 3

Pattern 4

Pattern 5

- (a) Draw the 5th pattern.

[1]

- (b) Complete the table.

[2]

Pattern number n	1	2	3	4	5
Number of dots in pattern n	3	7	11		19
Number of dots for the first n patterns	3	10	21	36	

- (c) Find the number of dots in the 6th pattern.

..... [1]

- (d) The sum of the number of dots for the first 10 patterns is 210.
Find the sum of the number of dots for the first 9 patterns.

..... [3]

- (e) Find an expression, in terms of n , for the total number of dots in pattern n .

..... [2]

- 3 (a) Sipho sells a packet containing 3 potatoes p and 2 tomatoes t at M11.
He also sells another packet containing 5 potatoes and 3 tomatoes at M18.
One of the equations formed from the information is $3p + 2t = 11$.

(i) Form another equation in terms of p and t .

..... [1]

(ii) Solve the two equations to find the value of p and the value of t .

$p =$

$t =$ [3]

(iii) The cost of the packet containing 3 potatoes and 2 tomatoes is increased by 5%.

Calculate the new price.

..... [2]

(b) The height, h metres, of tennis ball which is thrown vertically upwards is given by the formula $h = t^2 + 3t$, where t is the time in seconds.

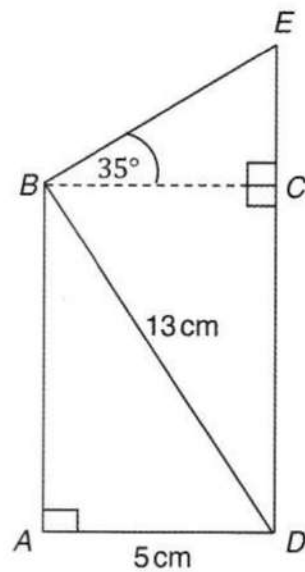
(i) Find the height of the ball after 2 seconds.

..... m [1]

(ii) Find the time t when the ball reaches the height of 18 m.

..... s [4]

- 4 In the diagram, $ABCD$ is a rectangle, and DBE is a right-angled triangle.
 $AD = 5\text{ cm}$, $BD = 13\text{ cm}$ and $\angle EBC = 35^\circ$.
 C is the point on the straight line DE .



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Calculate

- (a) the length AB ,

- (b) the size of $\angle ABD$,

..... cm [2]

- (c) the length DE .

..... $^\circ$ [2]

..... cm [3]

- 5 The diagram shows the positions of airport (P) and airport (Q) on a map. The scale is 1 cm represents 60 km.



- (a) Measure and write the bearing of Q from P .

.....° [2]

- (b) Calculate the **actual** distance of P to Q .

..... km [2]

- (c) In the diagram above, construct and mark the possible positions of another airport (S) such that it is

- I 240 km from airport P ,
- II equidistant from airports P and Q .

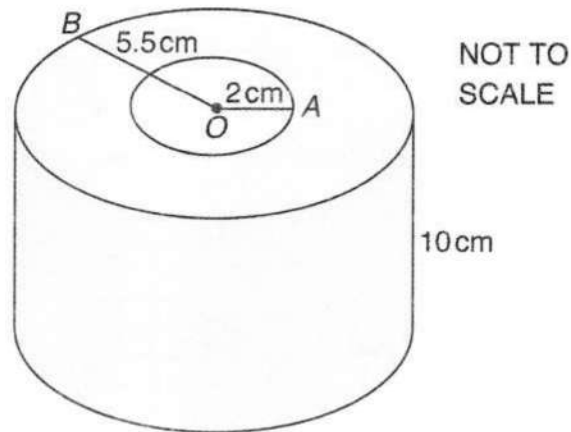
[5]

- (d) An aeroplane flies at the speed of 920 km/h for 42 minutes.

Calculate the distance travelled.

..... km [3]

- 6 The diagram shows a toilet paper roll of height 10 cm.
The inner radius $OA = 2$ cm and outer radius $OB = 5.5$ cm.



- (a) Calculate the volume occupied by the toilet paper.

..... cm³ [3]

- (b) The total length of the toilet paper when unrolled is given by the formula

$$L = \frac{\pi(R^2 - r^2)}{T} \times 100$$
 where T is the thickness of the rolled toilet paper and R and r are outer and inner radii respectively.

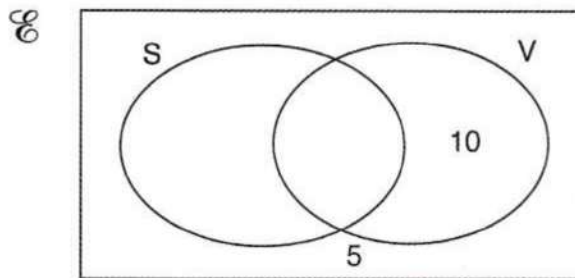
Show that the total length of the unrolled toilet paper is 2356 cm correct to **four** significant figures.

.....cm [2]

- (c) Calculate the total area of the unrolled toilet paper.

..... cm² [2]

- 7 The Sports Master asks 37 students whether they play Soccer (S), Volleyball (V) or both. 24 students play only one type of sport, 10 play volleyball only while 5 do not participate. The Venn diagram represents part of the information for the number of students.



(a) Complete the Venn diagram. [2]

(b) Find

(i) the number of students who play soccer only,

..... [1]

(ii) $n(S \cup V)'$.

..... [1]

(c) Use set symbols to represent the number of students who play volleyball only.

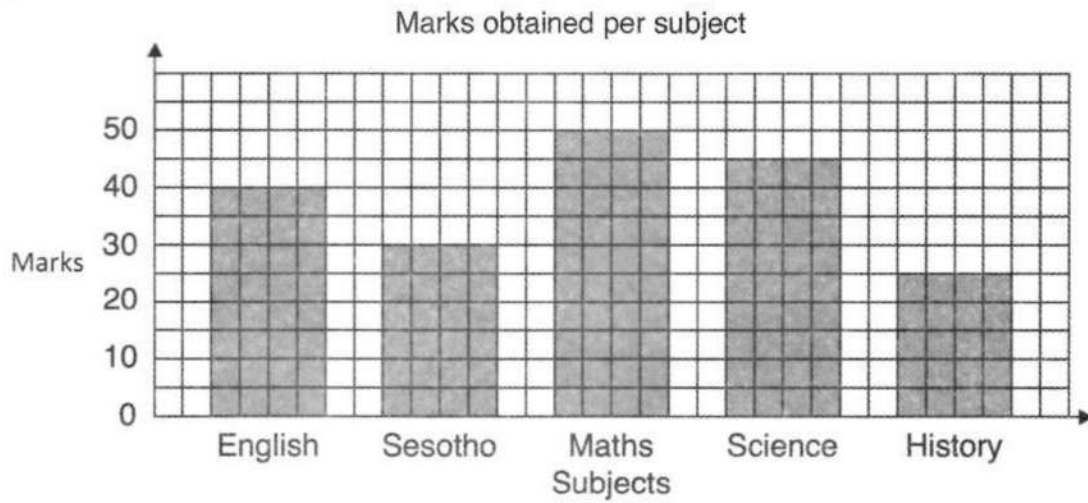
..... [2]

(d) A student is chosen at random from the group.

Calculate the probability that the student plays volleyball only or does not participate.

..... [2]

- 8 The bar graph represents the marks obtained by Thandeka from quarterly tests marked out of 50.



(a) Find

(i) the best performed subject,

..... [1]

(ii) the subject in which Thandeka obtained 60%.

..... [2]

(b) Calculate Thandeka's overall mean, in percentage, for all the subjects.

..... % [2]

- (c) A subject is chosen at random.

Calculate the probability that Thandeka obtained

- (i) 50%,

..... [1]

- (ii) 80% or 90%.

..... [2]

- 9 (a) Solve the equation $2x - 3 = 7$.

$x = \dots\dots\dots$ [2]

- (b) Express as a single fraction in its simplest form.

$$\frac{4x+3}{9} - \frac{2x-1}{6}$$

$\dots\dots\dots$ [3]

- (c) Factorise completely $10a + 15 - 4ab - 6b$.

$\dots\dots\dots$ [2]

- (d) $A = Prt + 4000$.

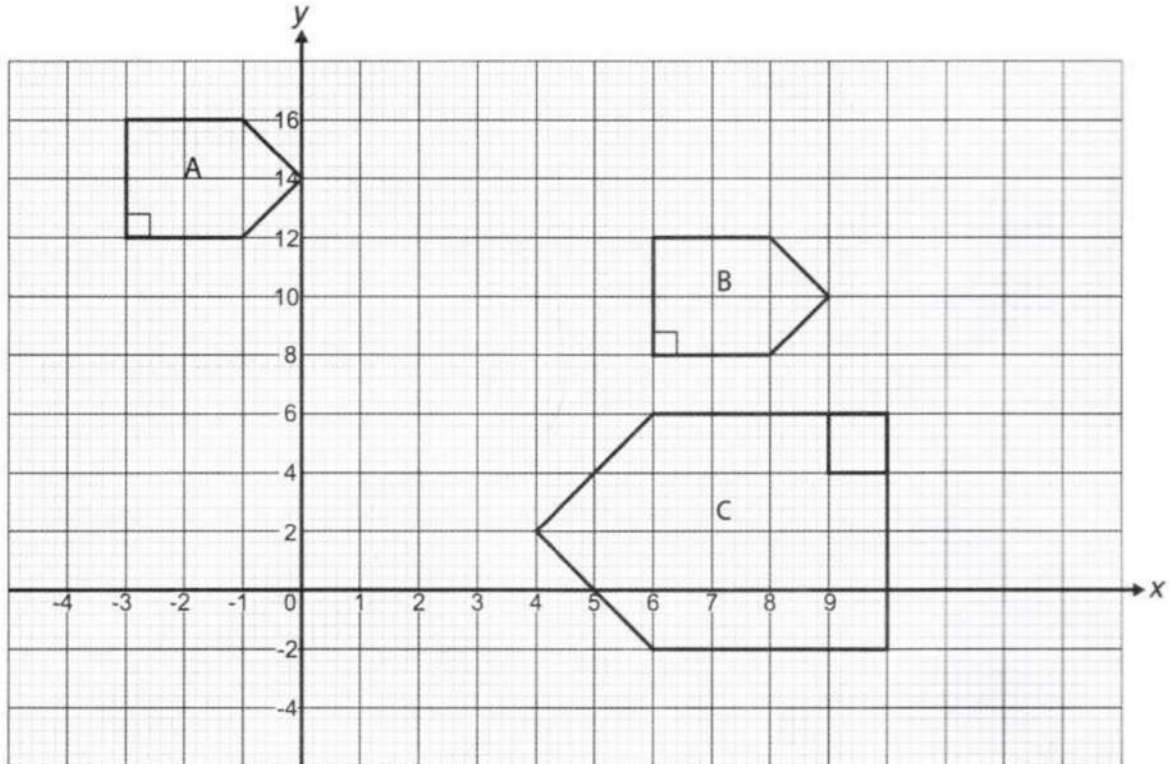
- (i) Find A when $P = 4000$, $r = \frac{3}{100}$ and $t = 7$.

$A = \dots\dots\dots$ [2]

- (ii) Make r the subject of the formula.

$r = \dots\dots\dots$ [2]

10 The diagram shows three shapes A , B and C .



- (a) Plot and label the point $T(9, 14)$ on the grid. [1]
- (b) Describe fully a single transformation which maps shape
- (i) A onto B ,

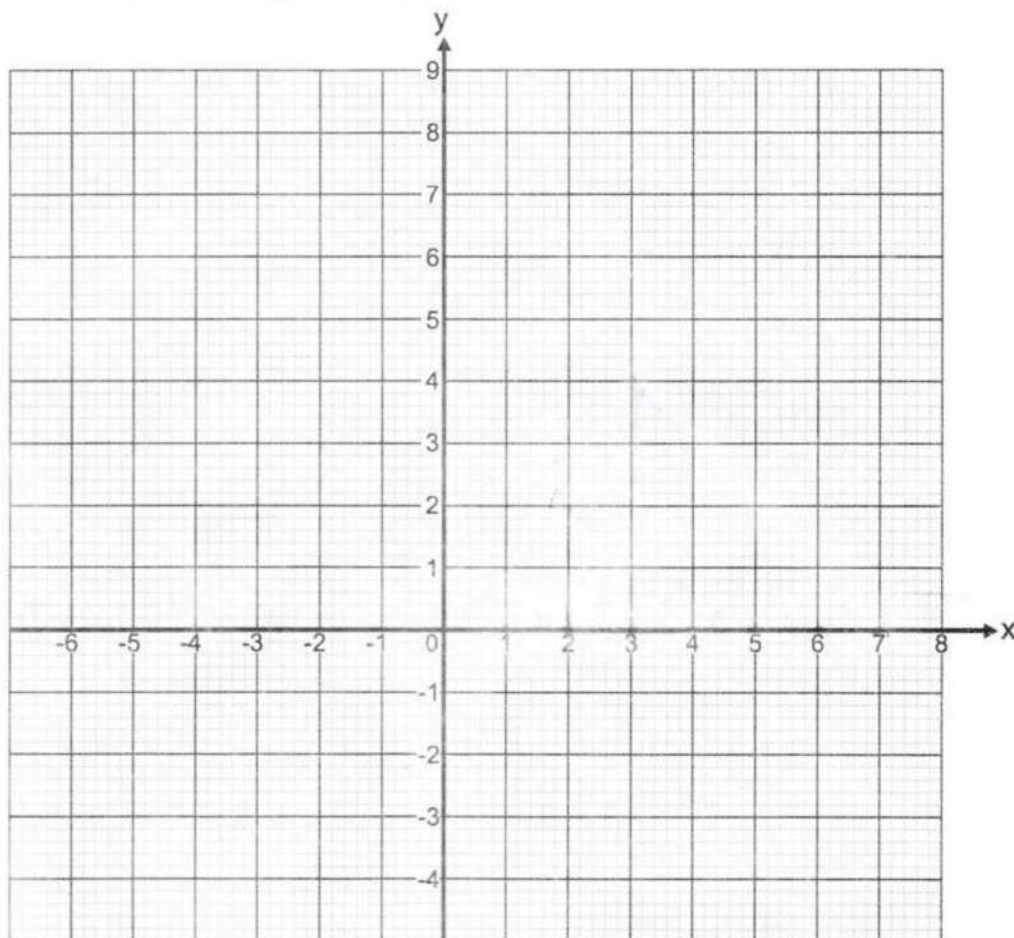
 [2]
- (ii) A onto C .

 [3]
- (c) Reflect shape A in the line $y = 10$ and label its image D . [2]

- 11 The table shows some values of x and y for $y = x^2 - 5x + 3$.

x	-1	0	1	2	3	4	5	6
y		3	-1	-3	-3	-1		9

- (a) Complete the table. [2]
- (b) On the grid, plot the points from the table and join them with a smooth curve for $y = x^2 - 5x + 3$ in the range $-1 \leq x \leq 6$.



- (c) Write the equation of the line of symmetry of the graph. [4]

..... [1]

- (d) State the coordinates of the turning point of the graph.

..... [1]