



ARMY BURN HALL COLLEGE FOR BOYS
Entry Test – Class AS Level

SUBJECT: MATHEMATICS

Time allowed: 1 hour

Maximum Marks: 50

INSTRUCTIONS

- Write your Roll Number only on the top right corner.
- Do not write your name or any other information.
- Do not use lead pencil.
- Avoid erasing, cutting, overwriting, etc.
- Any sign, mark, name, etc written on Answer Script to disclose your identity will disqualify you for admission to the College.

ATTEMPT ALL QUESTIONS

- Q. 1** Sonia earns \$8.12 for each hour she works.
She works for 35 hours each week.

Work out how much she earns each week.

\$..... [1]

- Q. 2** Work out \$216 as a percentage of \$600.

.....% [1]

- Q. 3** Simplify.

(a) $3f + 4f - 2f$

..... [1]

(b) $g^3 \times g^5$

..... [1]

Q. 4 David goes to college by bus.
On 6 mornings out of 45, the bus is late.
In one year David goes to college by bus 180 times.

Estimate how many mornings the bus is late in one year.

..... [2]

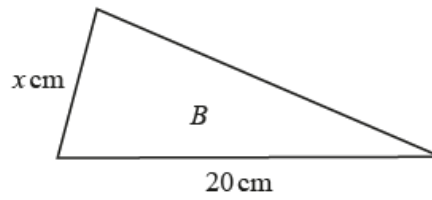
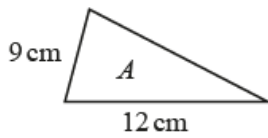
Q. 5 Here are the first five terms in a sequence.

4 11 18 25 32

Find an expression for the n th term of this sequence.

..... [2]

Q. 6



NOT TO SCALE

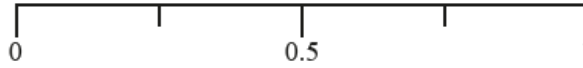
Triangle *A* and triangle *B* are similar.

Find the value of x .

$x =$ [2]

- Q. 7** (a) A bag contains 16 counters.
4 of the counters are blue.
A counter is taken from the bag at random.

On the probability scale, draw an arrow (↓) to show the probability that this counter is blue.



[1]

- (b) Another bag contains 5 black counters, 8 white counters, 6 green counters and 1 yellow counter.
A counter is taken from this bag at random.

Find the probability that this counter is

- (i) white,

..... [1]

- (ii) not white.

..... [1]

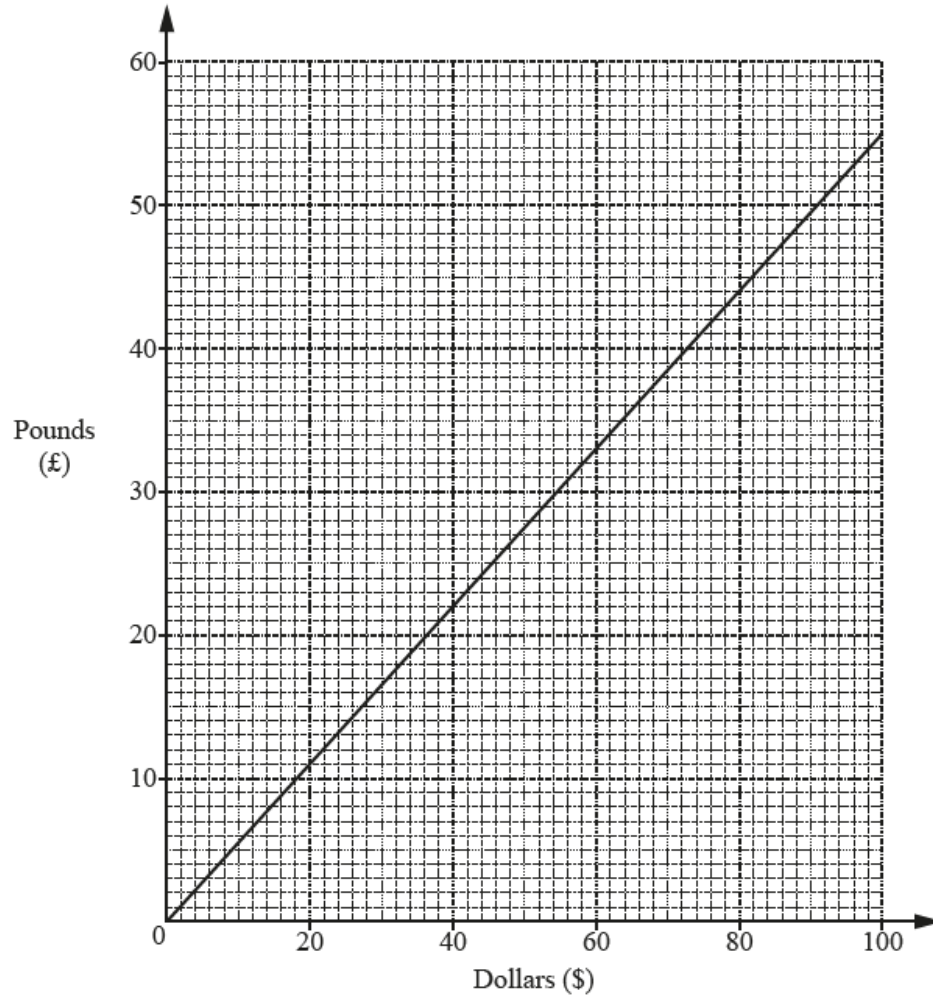
- Q. 8** Solve the simultaneous equations.
Show all your working.

$$\begin{aligned} 3x + 4y &= 14 \\ 5x + 2y &= 21 \end{aligned}$$

$x =$

$y =$ [3]

Q. 9 This is a graph for converting between dollars (\$) and pounds (£).



(a) Use the graph to convert \$80 to pounds.

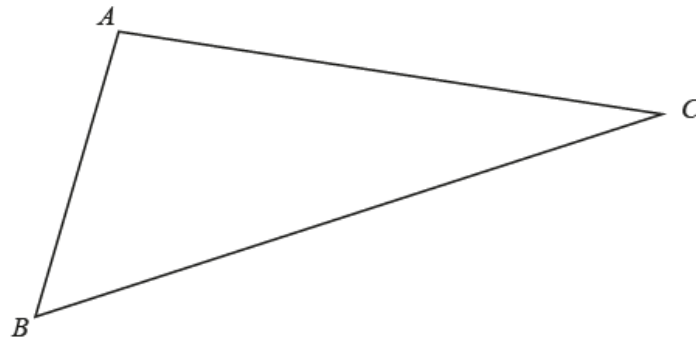
£..... [1]

(b) Daniyar changes £100 to dollars.

Work out how many dollars he receives.

\$..... [2]

Q. 10 The diagram shows triangle ABC .



(a) Using a straight edge and compasses only, construct the bisector of angle ABC . [2]

(b) Draw the locus of points **inside** the triangle that are 3 cm from AC . [1]

Q. 12 The equation of line L is $y = 4x - 3$.

Write down

(a) the co-ordinates of the point where the line L crosses the y -axis,

(.....,) [1]

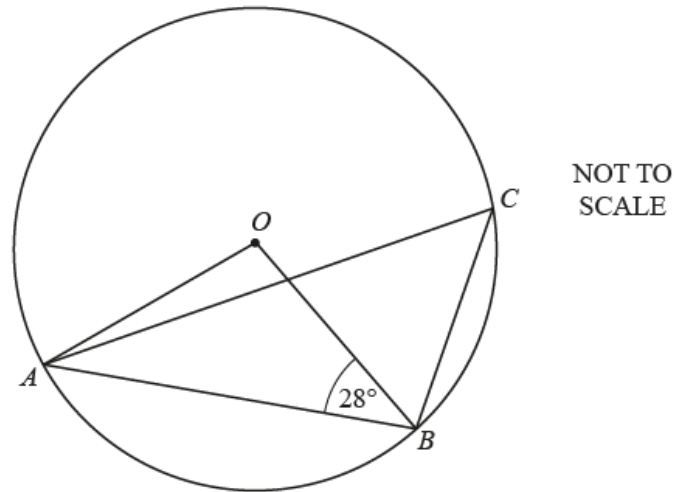
(b) the gradient of the line L ,

..... [1]

(c) the equation of the line parallel to line L that passes through the origin.

..... [1]

Q. 13



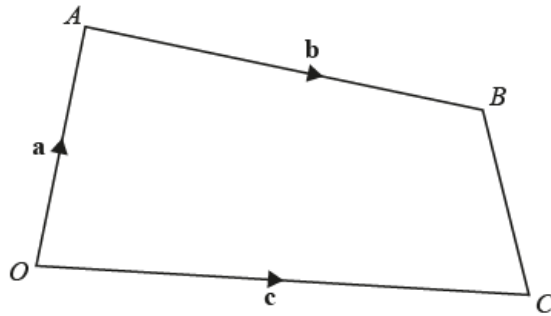
In the diagram, A , B and C lie on the circumference of a circle, centre O .

Work out the size of angle ACB .

Give a reason for each step of your working.

Angle $ACB = \dots\dots\dots$ [4]

Q. 14

NOT TO
SCALE

In the diagram, O is the origin, $\vec{OA} = \mathbf{a}$, $\vec{OC} = \mathbf{c}$ and $\vec{AB} = \mathbf{b}$.
 P is on the line AB so that $AP : PB = 2 : 1$.
 Q is the midpoint of BC .

Find, in terms of \mathbf{a} , \mathbf{b} and \mathbf{c} , in its simplest form

(a) \vec{CB} ,

$$\vec{CB} = \dots\dots\dots [1]$$

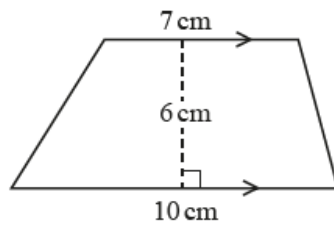
(b) the position vector of Q ,

$$\dots\dots\dots [2]$$

(c) \vec{PQ} .

$$\vec{PQ} = \dots\dots\dots [2]$$

Q. 15

NOT TO
SCALE

- (a) Calculate the area of the trapezium.

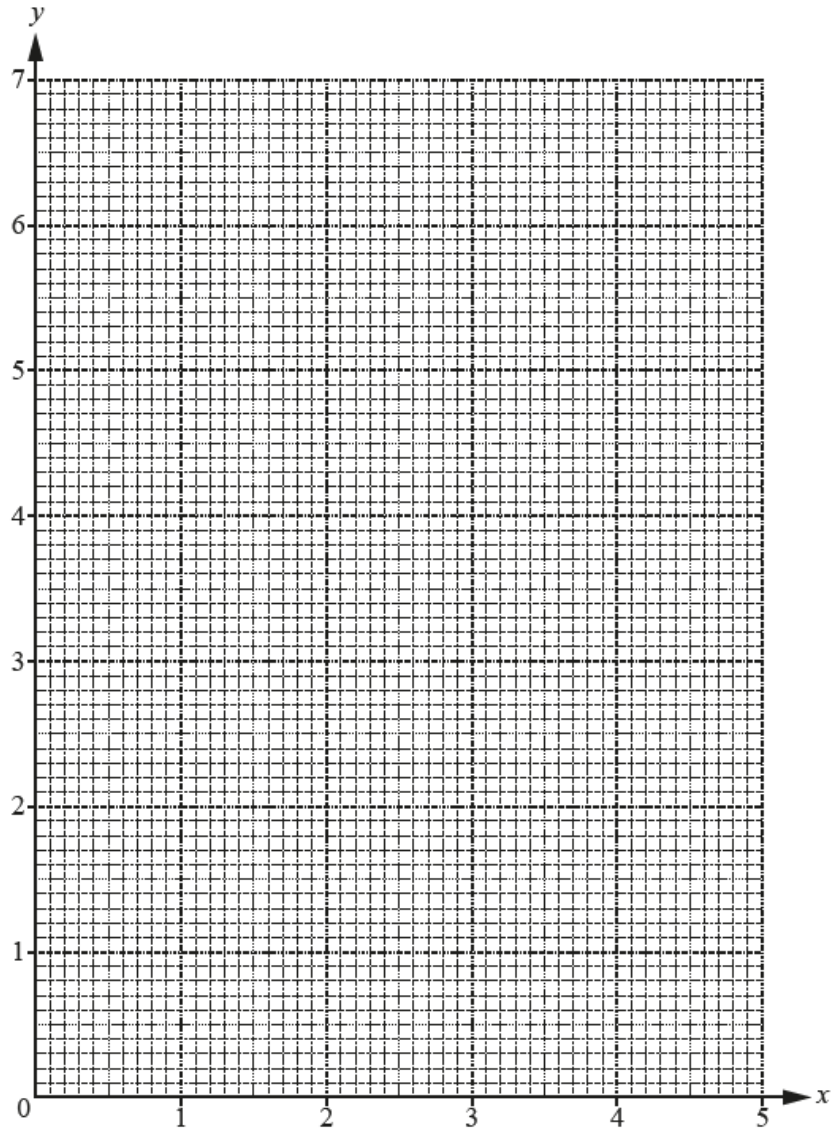
..... cm^2 [2]

- (b) The trapezium is the cross section of a prism.
The length of the prism is 12 cm.

Calculate the volume of the prism.
Give the units of your answer.

..... [2]

Q. 16



The region R satisfies these inequalities.

$$y \leq 2x \quad 3x + 4y \geq 12 \quad x \leq 3$$

On the grid, draw and label the region R that satisfies these inequalities.
Shade the **unwanted** regions.

[5]

Q. 17 The table shows the temperature each night for a week.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
-3°C	1°C	-4°C	-2°C	5°C	3°C	-1°C

(a) Which night was the coldest?

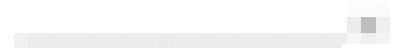
.....

[1]

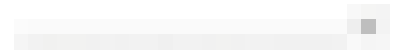
(b) Find the difference between the temperature on Monday night and the temperature on Tuesday night.

..... °C

[2]



[2]



[2]

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