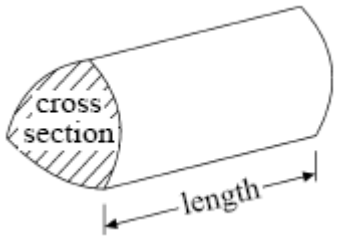
**Revision Paper 1**

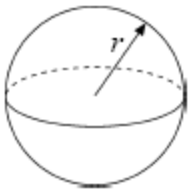
Formulae: Higher Tier

**You must not write on this formulae page.**
**Anything you write on this formulae page will gain NO credit.**

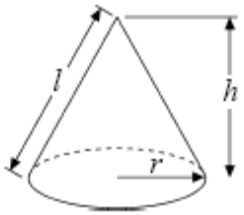
**Volume of prism** = area of cross section × length



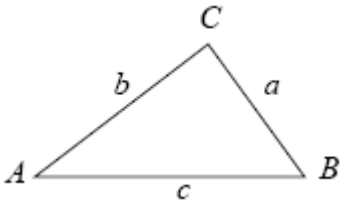

**Volume of sphere** $\frac{4}{3}\pi r^3$
**Surface area of sphere** $= 4\pi r^2$




**Volume of cone** $\frac{1}{3}\pi r^2 h$
**Curved surface area of cone** $= \pi r l$




**In any triangle ABC**




**The Quadratic Equation**
The solutions of $ax2+ bx + c = 0$
where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

**Sine Rule** $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

**Cosine Rule** $a^2 = b^2 + c^2 - 2bc \cos A$

**Area of triangle =** $\frac{1}{2} ab \sin C$

**Answer ALL questions.**
**Write your answers in the spaces provided.**
**You must write down all stages in your working.**

**1.** All of the students in a science class went to one revision class.

$\frac{1}{6}$ of the students went to the physics revision class.

$\frac{2}{9}$ of the students went to the biology revision class.

All of the other students went to the chemistry revision class.

What fraction of the students went to the chemistry revision class?

……..

**(Total for Question 1 is 3 marks)**

**2.** Bethan use**s** this formula to work out her gas bill

Cost = Fixed charge + Cost per unit × units used

Last month the Cost of her gas bill was £165
Her fixed charge was £45
The cost per unit was 50p

How many units did she use?

**(Total for Question 2 is 3 marks)**

***3.**

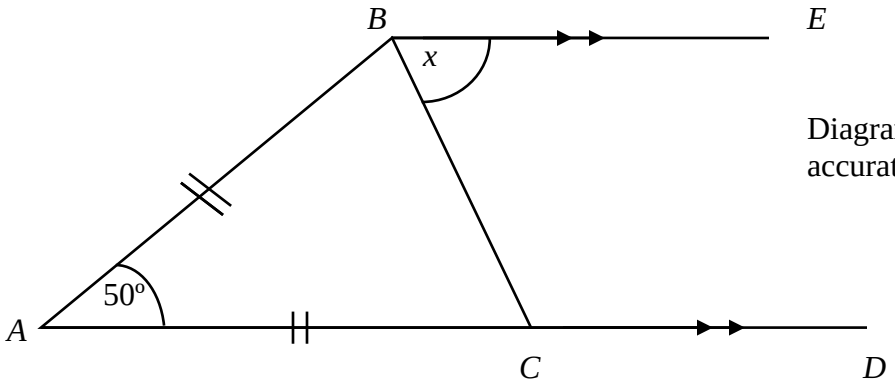



Diagram **NOT** accurately drawn

*ABC* is an isosceles triangle.
*AB* = *AC*.
*BE* is parallel to the straight line *ACD*.

Find the size of the angle marked *x*.
You must give reasons for each step in your working.

*x* = …….. °

**(Total for Question 3 is 5 marks)**

**4.** $F = 1.8C + 32$

(a) Work out the value of $F$ when $C = -8$

……

**(2)**

(b) Work out the value of $C$ when $F = 68$

……

**(2)**

**(Total for Question 4 is 4 marks)**

**5.** Fatima bought 48 teddy bears at £9.55 each.

She sold all the teddy bears for a total of £696.
She sold each teddy bear for the same price.

Work out the profit that Fatima made on the teddy bears.

£ ……..

**(Total for Question 5 is 4 marks)**

**6.** (a) Work out $\frac{2}{3} - \frac{1}{4}$

.....

**(2)**

(b) Work out $2\frac{3}{4} + 5\frac{1}{2}$

.....

**(3)**

**(Total for Question 6 is 6 marks)**

***7.** Amy has a field in the shape of a trapezium.

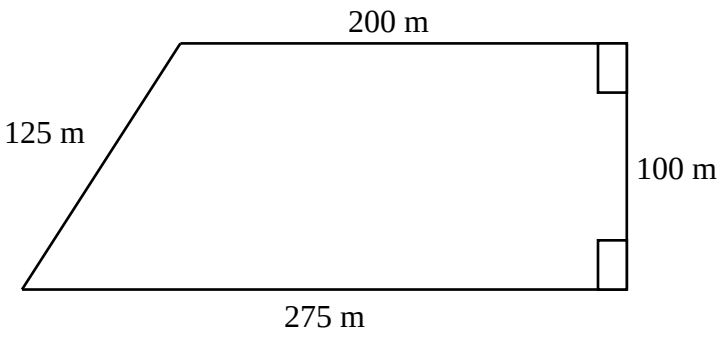



Diagram **NOT** accurately drawn

She wants to sell the field.

Farmer Boyce offers her £1 per $m^2$
Farmer Giles offers her £24 000

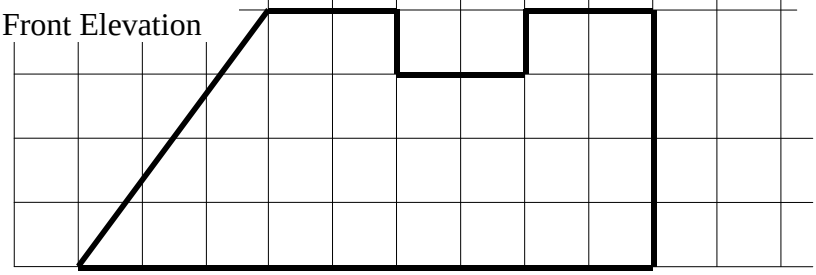
Which is the better offer?
You must show **all** your working.

**(Total for Question 7 is 4 marks)**

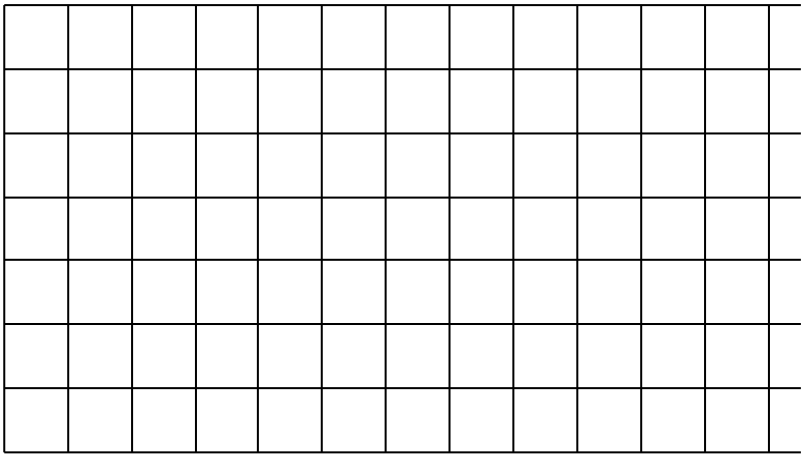
**8.** Here are the plan and front elevation of a prism.
The cross section of the shape is represented by the front elevation.

Plan

Front Elevation



(a) On the grid below draw a side elevation.



**(2)**

(b) In the space below draw a 3D sketch of the shape.

**(2)**

**(Total for Question 8 is 4 marks)**

**9.** (a) Write 357 000 in standard form.

.....

**(1)**

(b) Write as an ordinary number $4.5 \times 10^{-3}$

.....

**(1)**

**(Total for Question 9 is 2 marks)**

**10.** A cuboid is drawn on a 3-D coordinate grid with one vertex placed at the origin *O*.
It has 3 of its edges lying along the *x*, *y*, and *z* axes.

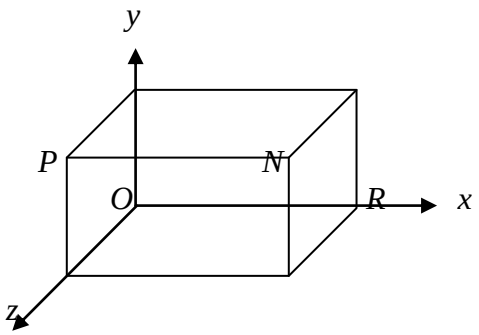



Diagram **NOT** accurately drawn

The point *N* has coordinates (4, 2, 3).

(a) What are the coordinates of the point *P*?

(..... , ..... , .....)

**(1)**

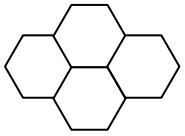
(b) What are the coordinates of the mid point of the line segment *RN*.

(..... , ..... , .....)

**(2)**

**(Total for Question 10 is 3 marks)**

***11.** Some regular polygons will tessellate without using another shape.



An octagon and a square will tessellate.

Explain fully, giving reasons, how they do this.

**(Total for Question 11 is 4 marks)**

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**12.** (a) Expand and simplify $(x + 3)(x - 4)$

……

**(2)**

(b) Factorise completely $12p^2q^3 + 18p^3q^2$

……..

**(2)**

(c) Factorise completely $25x^4 - 49y^2$

……

**(2)**

**(Total for Question 12 is 6 marks)**

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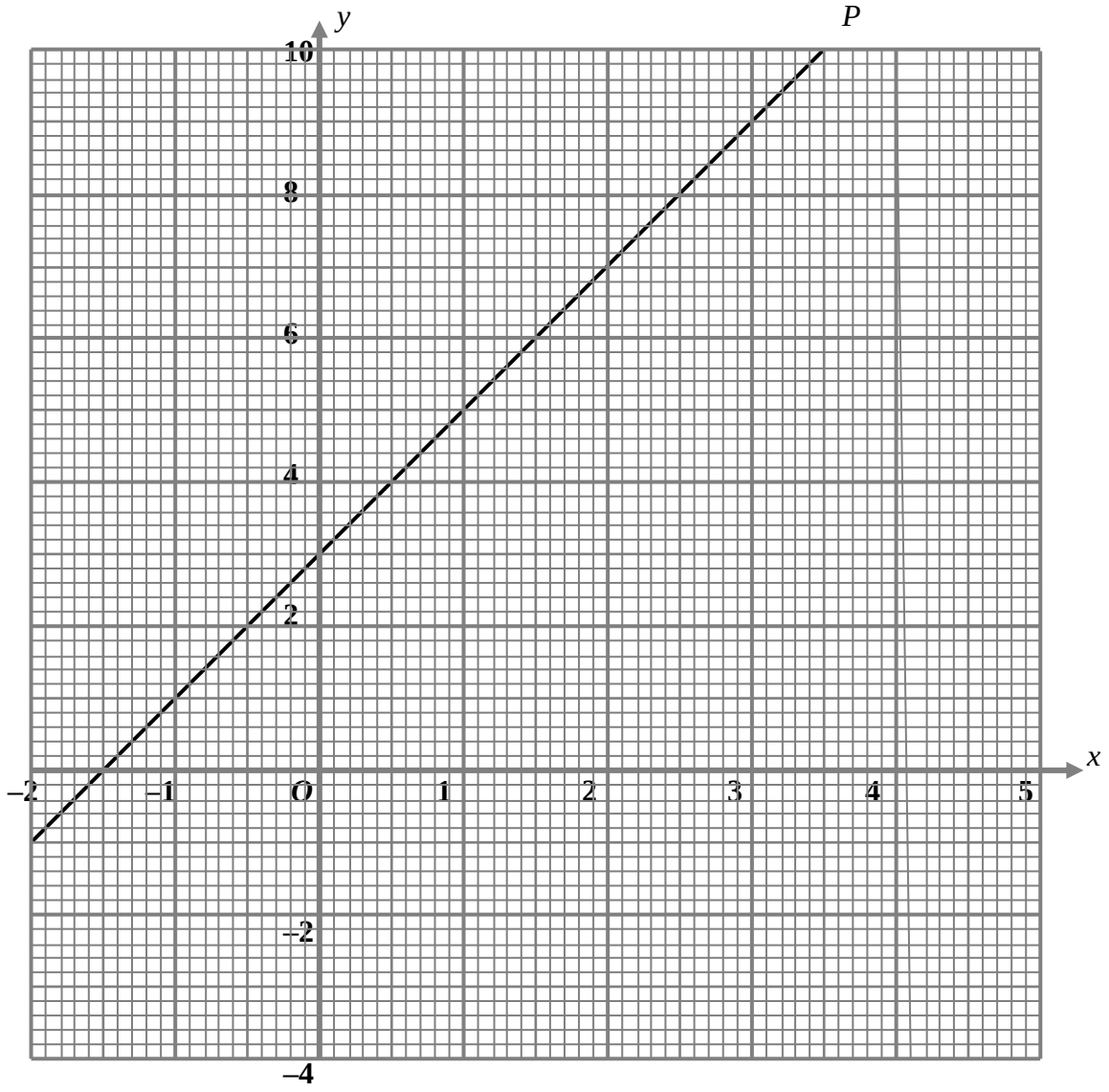
**13.** The straight line *P* is drawn on the coordinate grid.




(a) Find an equation for the straight line *P*.

.....

**(3)**

(b) Write down an equation for a straight line that is perpendicular to line *P*.

……

**(2)**

**(Total for Question 14 is 5 marks)**

……..

**(Total for Question 15 is 4 marks)**

**TOTAL FOR PAPER is 60 MARKS**