

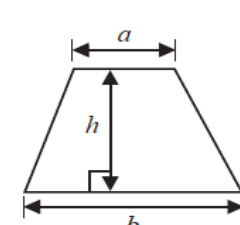
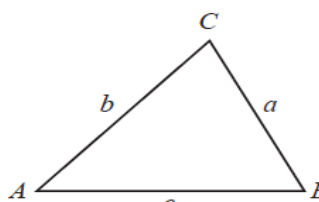
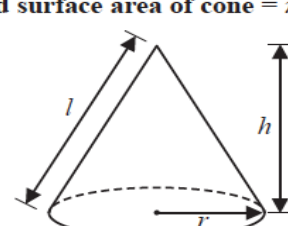
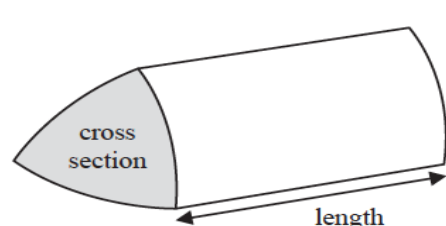
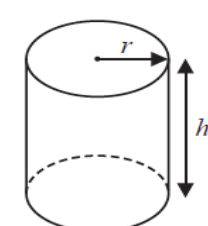
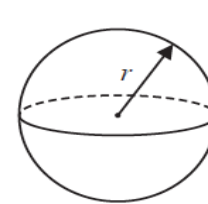


Activity 4

June 2019 Paper 2H (Excerpt) (No working space)

International GCSE Mathematics

Formulae sheet – Higher Tier

<p>Arithmetic series Sum to n terms, $S_n = \frac{n}{2} [2a + (n-1)d]$</p> <p>The quadratic equation The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$</p>	<p>Area of trapezium $= \frac{1}{2}(a+b)h$</p> 
<p>Trigonometry</p> 	<p>In any triangle ABC</p> <p>Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$</p> <p>Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$</p> <p>Area of triangle $= \frac{1}{2}ab \sin C$</p>
<p>Volume of cone $= \frac{1}{3}\pi r^2 h$</p> <p>Curved surface area of cone $= \pi r l$</p> 	<p>Volume of prism $= \text{area of cross section} \times \text{length}$</p> 
<p>Volume of cylinder $= \pi r^2 h$</p> <p>Curved surface area of cylinder $= 2\pi r h$</p> 	<p>Volume of sphere $= \frac{4}{3}\pi r^3$</p> <p>Surface area of sphere $= 4\pi r^2$</p> 

You must write down all the stages in your working.


- 1** The table shows information about the heights, in cm, of 48 sunflowers in a garden centre.

Height of sunflower (h cm)	Frequency
$90 < h \leq 100$	8
$100 < h \leq 110$	12
$110 < h \leq 120$	15
$120 < h \leq 130$	10
$130 < h \leq 140$	3

Work out an estimate for the mean height of the sunflowers.

(Total for Question 1 is 4 marks)

- 2** Use ruler and compasses to construct the perpendicular bisector of the line DE .
You must show all your construction lines.

D  E

(Total for Question 2 is 2 marks)



Pearson

Edexcel

3 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$$A = \{2, 3, 5, 7\}$$

$$B = \{4, 6, 8, 10\}$$

(a) Explain why $A \cap B = \emptyset$

(1)

$$x \in \mathcal{E} \text{ and } x \notin A \cup B$$

(b) Write down the **two** possible values of x .

(1)

Set C is such that

$$A \cup B \cup C = \mathcal{E}$$

$$A \cap C = \{2\}$$

$$B \cap C' = \{4, 6, 10\}$$

(c) List all the members of set C .

(2)

(Total for Question 3 is 4 marks)

4 A cylinder has diameter 14 cm and height 20 cm.

Work out the volume of the cylinder.

Give your answer correct to 3 significant figures.

.....cm³

(Total for Question 4 is 2 marks)



5 Josh buys and sells books for a living.

He buys 120 books for £4 each.

He sells $\frac{1}{2}$ of the books for £5 each.

He sells 40% of the books for £7 each.

He sells the rest of the books for £8 each.

(a) Calculate Josh's percentage profit.

.....%

(5)

One book that Josh owns had a value of £15 on the 1st May 2019

The value of this book had increased by 20% in the last year.

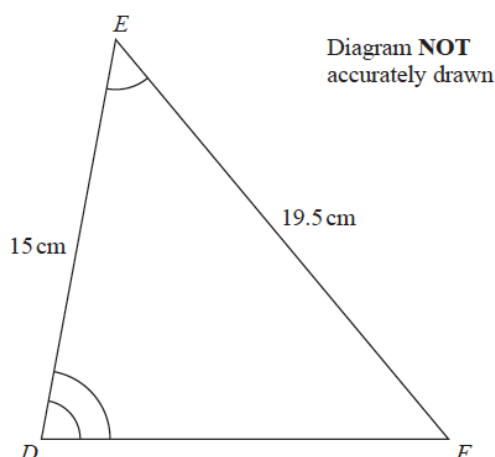
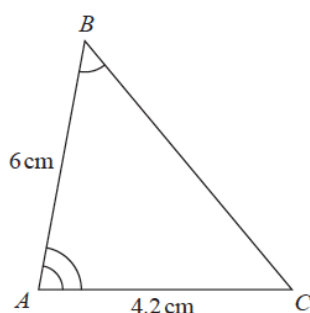
(b) Find the value of the book on the 1st May 2018.

£.....

(3)

(Total for Question 5 is 8 marks)

6 ABC and DEF are similar triangles.



(a) Work out the length of DF .

.....cm

(2)

(b) Work out the length of BC .

.....cm

(2)

(Total for Question 6 is 4 marks)



- 7 30 students in a class sat a Mathematics test.
The mean mark in the test for the 30 students was 26.8

13 of the 30 students in the class are boys.
The mean mark in the test for the boys was 25

Find the mean mark in the test for the girls.
Give your answer correct to 3 significant figures.

.....
(Total for Question 7 is 3 marks)

- 8 Change a speed of x kilometres per hour into a speed in metres per second.
Simplify your answer.

.....m/s
(Total for Question 8 is 3 marks)

- 9 Solve the simultaneous equations

$$\begin{aligned}x + 2y &= -0.5 \\ 3x - y &= 16\end{aligned}$$

Show clear algebraic working.

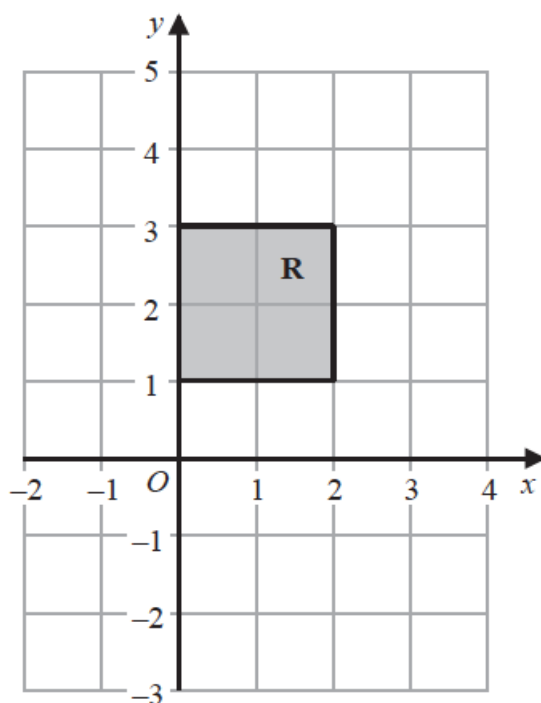
$x =$
 $y =$
(Total for Question 9 is 3 marks)

10 The straight line **L** has gradient 5 and passes through the point with coordinates $(0, -3)$

(a) Write down an equation for **L**.

.....
(2)

(b)



The region **R**, shown shaded in the diagram, is bounded by four straight lines.

Write down the inequalities that define **R**.

.....
(2)

(Total for Question 10 is 4 marks)



- 11 The table gives the average crowd attendance per match for each of five football clubs for one season.

Football club	Average crowd attendance
Monaco	9.5×10^3
Chelsea	4.2×10^4
Juventus	3.9×10^4
Oxford United	8.3×10^3
Barcelona	7.7×10^4

- (a) Find the difference between the average crowd attendance for Barcelona and the average crowd attendance for Monaco.
Give your answer in standard form.

.....
(2)

Antonio says,

“The average crowd attendance for Chelsea is approximately 50 times that for Oxford United.”

- (b) Is Antonio correct?
You must give a reason for your answer.

.....
.....
.....
(2)

During last season the cost of a ticket to watch Seapron United increased by 15% and then decreased by 8%

- (c) Work out the overall percentage change in the cost of a ticket to watch Seapron United during last season.

.....%
(2)

(Total for Question 11 is 6 marks)



12 $ABCD$ is a trapezium.

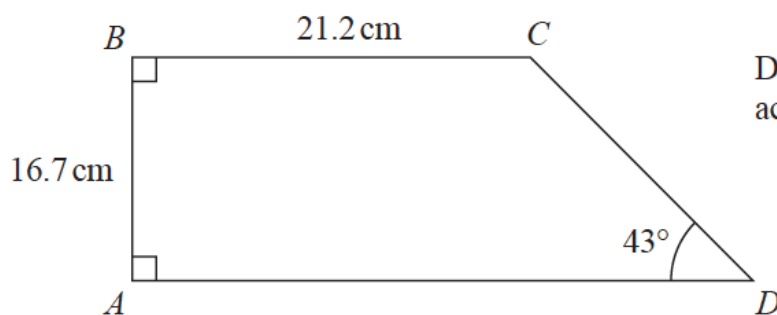


Diagram **NOT**
accurately drawn

Calculate the perimeter of the trapezium.
Give your answer correct to 3 significant figures.

.....cm

(Total for Question 12 is 4 marks)

END