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## 0580/13

May/June 2019

1 hour

**Additional Materials:**      Electronic calculator                      Geometrical instruments  
Tracing paper (optional)

**READ THESE INSTRUCTIONS FIRST**

DO **NOT** WRITE IN ANY BARCODES.

For  $\pi$ , use either your calculator value or 3.142.

The total of the marks for this paper is 56.

This document consists of **11** printed pages and **1** blank page.

- 1 Write 3.058 correct to 3 significant figures.

..... [1]

- 2 Write 0.45 as a fraction in its simplest form.

..... [1]

- 3 Factorise  $2x^2 - x$ .

..... [1]

- 4 Find the co-ordinates of the point where the line  $y = 3x - 8$  crosses the  $y$ -axis.

(..... , ..... ) [1]

- 5 Giulio's reaction times are measured in two games.  
In the first game his reaction time is  $\frac{1}{3}$  of a second.  
In the second game his reaction time is  $\frac{1}{8}$  of a second.  
Find the difference between the two reaction times.

..... s [1]

- 6 The probability that Alex wins a prize is 0.27 .

Find the probability that Alex does not win a prize.

..... [1]

- 7 The table shows the different methods of travel for 20 people going to work.

Method of travel	Frequency
Car	10
Walk	5
Bike	3
Bus	2

Which type of average, mean, median or mode, can be used for this information?

..... [1]

- 8 Calculate.

(a)  $-12 \div -2$

..... [1]

(b)  $\sqrt[3]{2^3 + 2}$

..... [1]

- 9 Simplify.

$$4x - 12y + 10x + 25y$$

..... [2]

- 10 Here is a list of numbers.

21

$\frac{2}{3}$

$\sqrt{13}$

31

$\sqrt{121}$

51

0.7

From this list, write down

- (a) a prime number,

..... [1]

- (b) an irrational number.

..... [1]

11  $\mathbf{p} = \begin{pmatrix} 5 \\ 0 \end{pmatrix}$   $\mathbf{q} = \begin{pmatrix} 1 \\ 6 \end{pmatrix}$

Work out  $2\mathbf{p} + 3\mathbf{q}$ .

$$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix} [2]$$

12 Write down the type of correlation you would expect for the following.

(a) The average speed of a train and the time taken for a journey.

..... [1]

(b) The distance travelled by a car and the amount of fuel used.

..... [1]

13 The scale drawing shows a rock,  $R$ .  
The scale is 1 centimetre represents 30 metres.  
A lighthouse,  $L$ , is 210 m from  $R$ , on a bearing of  $125^\circ$ .

On the diagram, mark the position of  $L$ .



Scale : 1 cm to 30 m  
[2]

- 14 Rearrange  $2(w + h) = P$  to make  $w$  the subject.

$$w = \dots\dots\dots [2]$$

- 15 Genaro measures the length,  $l$  cm, of his desk as 120 cm, correct to the nearest centimetre.

Complete the statement about the value of  $l$ .

$$\dots\dots\dots \leq l < \dots\dots\dots [2]$$

- 16 Solve.

$$7x - 5 = 16$$

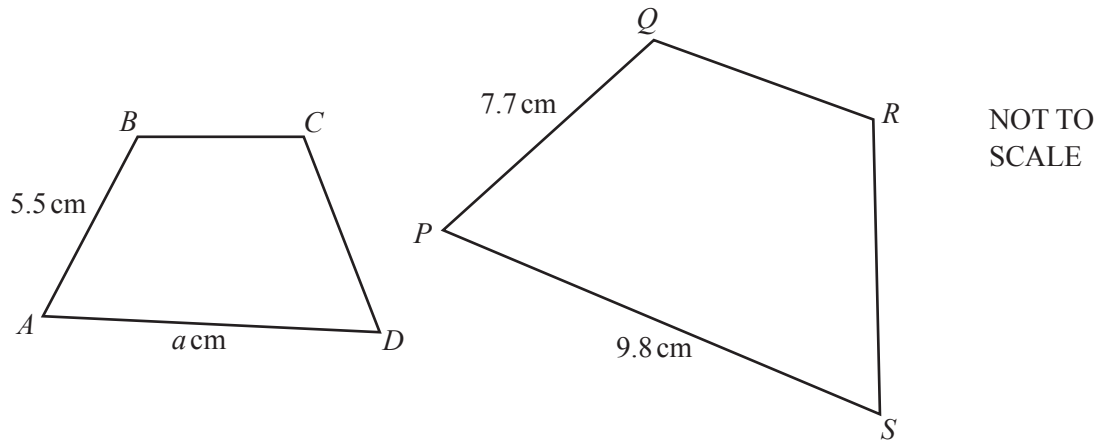
$$x = \dots\dots\dots [2]$$

- 17 **Without using a calculator**, work out  $\frac{12}{35} \times \frac{7}{9}$ .

You must show all your working and give your answer as a fraction in its simplest form.

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

18



Shape  $ABCD$  is similar to shape  $PQRS$ .

Work out the value of  $a$ .

$a = \dots\dots\dots$  [2]

- 19 Harry invests \$800 for 2 years at a rate of 3% per year compound interest.

Calculate the amount of interest he receives at the end of the 2 years.

\$ \dots\dots\dots\$ [3]

- 20** Solve the simultaneous equations.  
You must show all your working.

$$\begin{aligned}5x - 2y &= 26 \\ 7x + 6y &= 10\end{aligned}$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [3]$$

21 (a) Write down the next term in each sequence.

(i) 12, 7, 2, -3, -8, ..... [1]

(ii) 4, 7, 13, 25, 49, ..... [1]

(b) Find an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

5, 8, 11, 14, ...

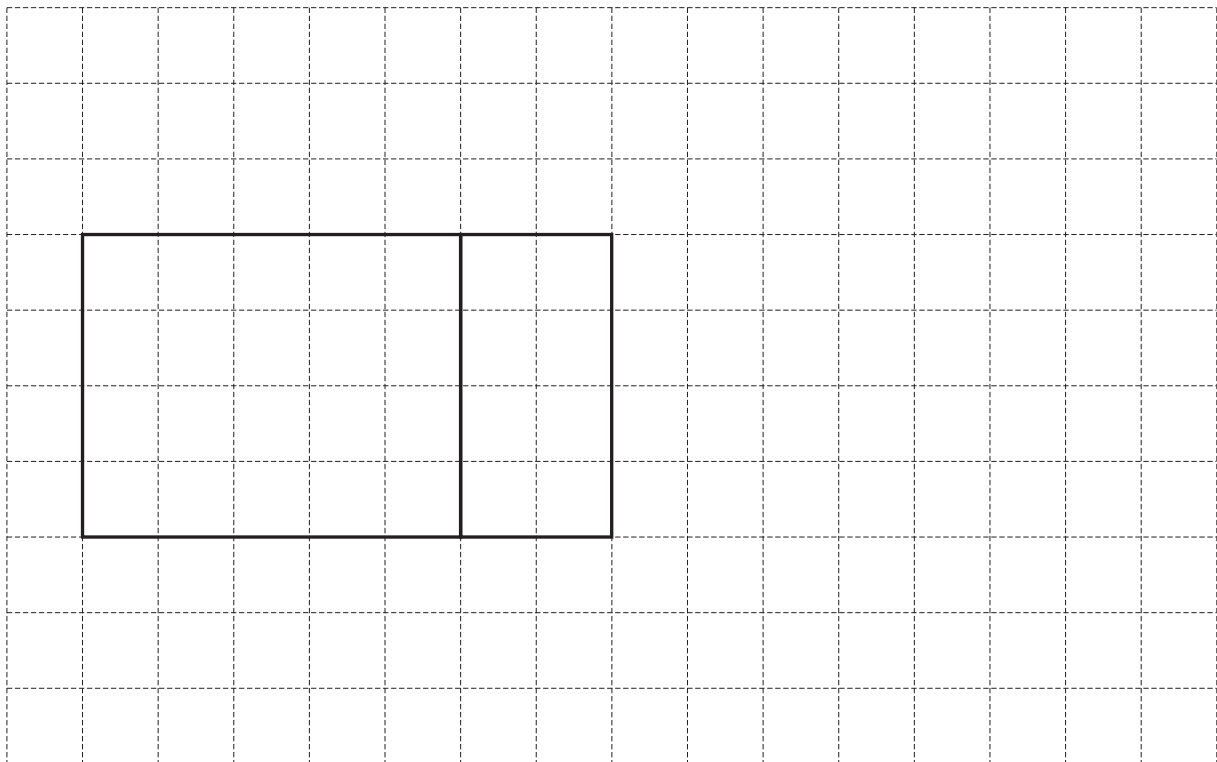
..... [2]

22 A closed box in the shape of a cuboid has length 5 cm, width 4 cm and height 2 cm.

(a) Calculate the volume of the box.

.....  $\text{cm}^3$  [2]

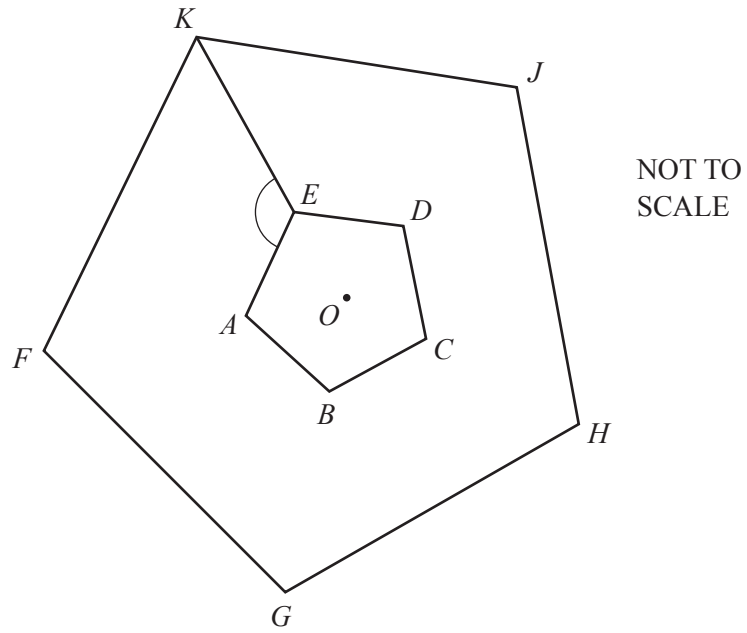
(b) On the  $1 \text{ cm}^2$  grid, complete the net of this box.



[2]



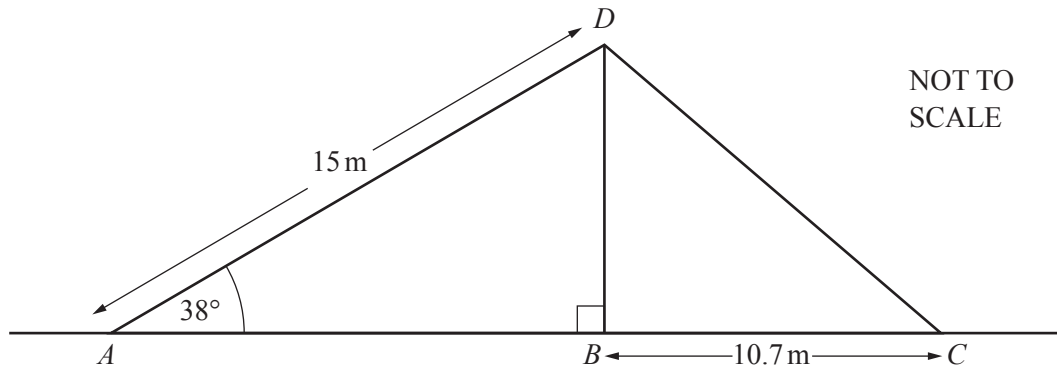
23



The diagram shows two regular pentagons.  
 Pentagon  $FGHIK$  is an enlargement of pentagon  $ABCDE$ , centre  $O$ .

Find angle  $AEK$ .

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



A vertical flagpole,  $BD$ , stands on horizontal ground and is held by two ropes,  $AD$  and  $CD$ .  
 $AD = 15\text{ m}$ ,  $BC = 10.7\text{ m}$  and angle  $DAB = 38^\circ$ .

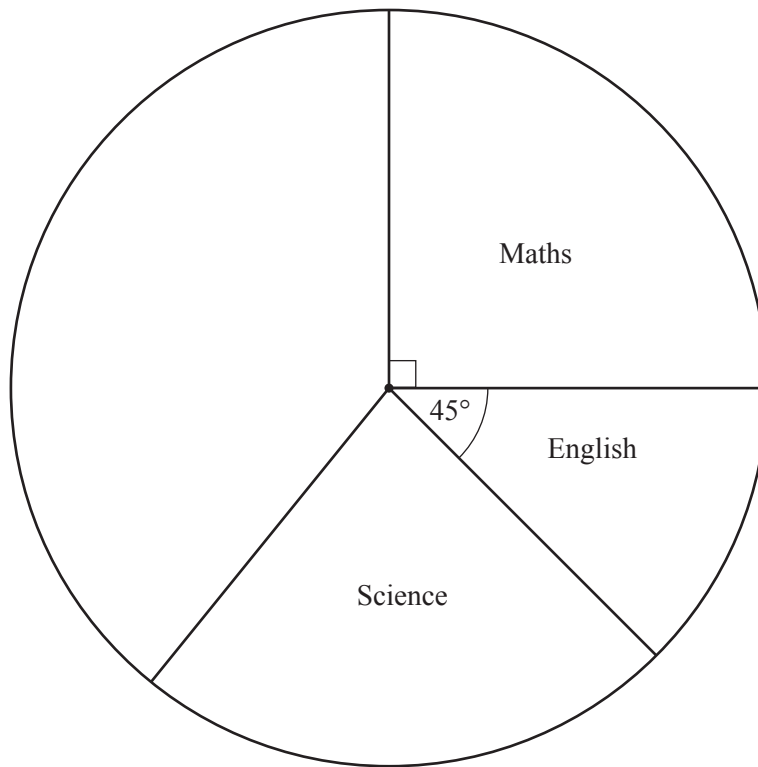
- (a) Using trigonometry, calculate  $BD$ .

$BD = \dots\dots\dots\text{ m [2]}$

- (b) Calculate  $CD$ .

$CD = \dots\dots\dots\text{ m [2]}$

- 25 Jason spends 480 minutes at school each day.  
The pie chart shows the time he spends in three of his lessons.



- (a) Measure the sector angle for science.

..... [1]

- (b) Work out the time, in minutes, Jason spends in English.

..... min [2]

- (c) Jason spends 100 minutes in geography and the rest of the day is free time.

Complete the pie chart.

[2]

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