Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

3300U10-1

A20-3300U10-1

MONDAY, 9 NOVEMBER 2020 – MORNING

MATHEMATICS
UNIT 1: NON-CALCULATOR
FOUNDATION TIER

1 hour 30 minutes

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the additional page at the back of the booklet. Question numbers must be given for all work written on the additional page.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

In question **12**, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**2**	
2.	**5**	
3.	**2**	
4.	**2**	
5.	**2**	
6.	**2**	
7.	**2**	
8.	**3**	
9.	**5**	
10.	**2**	
11.	**2**	
12.	**5**	
13.	**4**	
14.	**4**	
15.	**5**	
16.	**3**	
17.	**3**	
18.	**4**	
19.	**5**	
20.	**3**	
Total	**65**	

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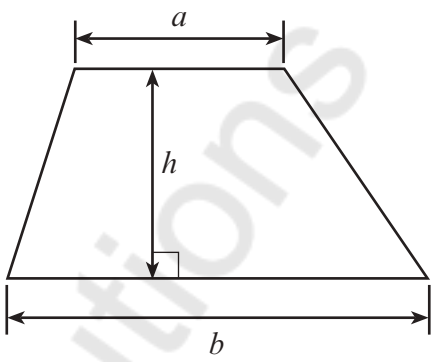
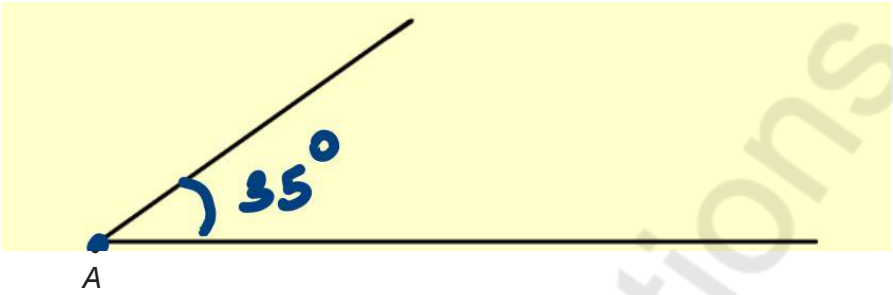
Formula List – Foundation Tier

Area of trapezium $= \frac{1}{2}(a + b)h$



Examiner only

1. *(a)* Draw an angle of 35° at point *A*. [1]



(b) In the space below, draw a circle with a diameter of 14 cm.
The centre of the circle is marked ● below. [1]

diameter = 2 × radius

$\frac{14\text{cm}}{2} = \frac{2r}{2}$

$r = 7\text{cm}$

Examiner only

2. *(a)* Add 4571 and 862. [1]

$$\begin{array}{r} {}^{1}{}^{1}4571 \\ +\ 862 \\ \hline 5433 \end{array}$$

(b) Subtract 643 from 817. [1]

$$\begin{array}{r} 7\not{8}{}^{1}7_{10} \\ -\ 643_{10} \\ \hline 174 \end{array}$$

(c) Calculate one quarter of 300. [1]

$$\frac{1}{4}\text{ of }300 \Rightarrow \frac{1}{4}\times\frac{300}{1} \Rightarrow \frac{300}{4} \Rightarrow 75$$

(d) Gwilym thinks of a number.
When he divides his number by 7, he gets an answer of 6.

When he divides his number by 2, what should his answer be? [2]

Let the no represent $= x$

$$\frac{7x}{7} = 6\times 7 \Rightarrow x = 42 \div 2 = \frac{42}{2} = 21$$

3. *(a)* Write 637 correct to the nearest 100. [1]

$$637 = 600$$

(b) Write 3892 correct to the nearest thousand. [1]

$$3892 = 4000$$

Examiner only

4. *(a)* One of these letters has exactly one line of symmetry.
Circle this letter. [1]

P H Z D O

(b) One of these letters has rotational symmetry of order 2.
Circle this letter. [1]

N T S L M

5. *(a)* Write a number in the empty box to make the calculation correct. [1]

20 – 9 + 6 = 17

$20 - x + 6 = 17 + x$

$(-17) + 26 = -17 + x + (-17) \Rightarrow x = -17 + 26 = 26 - 17$

$x = 9$

(b) Put +, –, × or ÷ in each space below to make the calculation correct. [1]

18 ÷ 6 – 2 = 1

$3 - 2 = 1$

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6. Write down the next number in each of the following sequences.

(a) 29, 35, 41, 47, ... [1]

53

+6

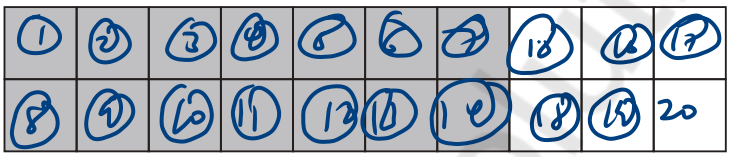
47 + 6 = 53

(b) 2000, 1000, 500, 250, ... [1]

−1000 −500 −250 −125

125

7. *(a)* What **percentage** of this diagram has been shaded? [1]



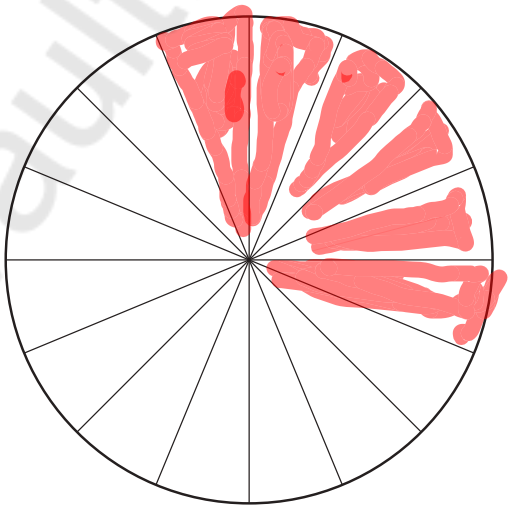
14/20 × 100%

7 × 10%

= 70%

70 %

(b) Shade $\frac{3}{8}$ of this diagram. [1]



3/8 × 16 = 6

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8. *C* is a point on the straight line *AB*.

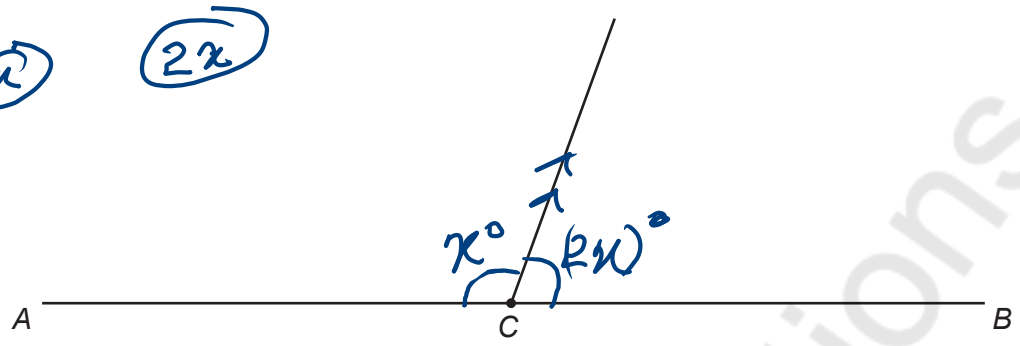


Diagram not drawn to scale

The straight line drawn at *C* makes two different angles above the line *AB*.
One angle is twice the size of the other angle.

Calculate the size of each of the two angles. [3]

Let one of the angle rep = x

Such that; the other angle = 2 × x = 2x

x + 2x = 180° { Sum of angle formed on a —— }

$\frac{3x}{3} = \frac{180^\circ}{3}$ ⇒ x°, (2x)°

x = 60° ⇒ 60°, 2(60°)

⇒ 60°, 120°

The two angles are 60° and 120°.

Examiner only

9. *(a)* Simplify the expression $9g - 5g + 12g$. [1]

$9g - 5g + 12g \Rightarrow 9g + 12g - 5g$

$\Rightarrow 21g - 5g \Rightarrow 16g$

(b) Solve the equation $5y = 45$. [1]

$\frac{5y}{5} = \frac{45}{5} \quad y = 9$

(c) Solve the equation $w - 16 = 14$. [1]

$w - 16 = 14 \quad \therefore w = 30$

$w - 16 + 16 = 14 + 16 = 30$

(d) Solve the equation $4x + 7 = 10$. [2]

$4x + 7 = 10$

$4x + 7 + (-7) = 10 + (-7)$

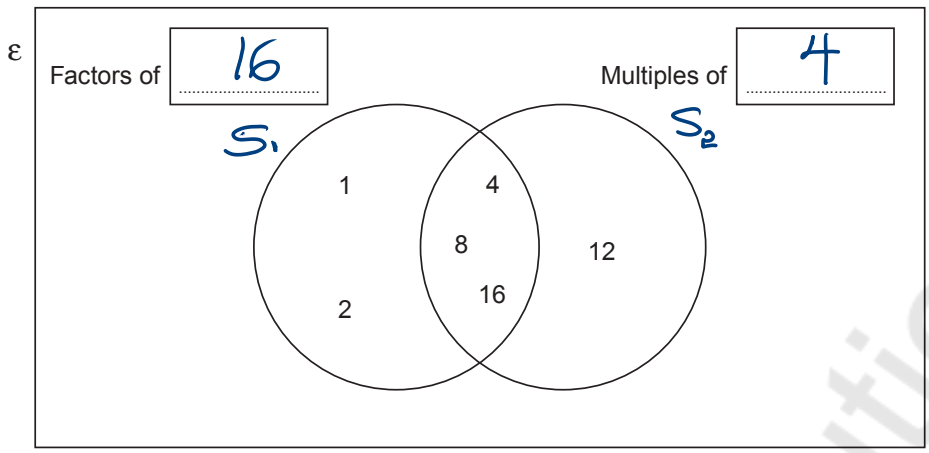
$4x = 10 - 7$

$\frac{4x}{4} = \frac{3}{4} \quad x = \frac{30}{40} = 0.75$

$x = 0.75$

Examiner only

10. Write a number in each box to describe the sets in this Venn diagram. [2]



2 × 1 = 2
2 × 2 = 4
2 × 3 = 6
2 × 4 = 8

4 × 1 = 4
4 × 2 = 8
4 × 3 = 12
4 × 4 = 16

Space for working:

Set 1 ⇒ {1, 2, 4, 8, 16} has a factor of 16, 32, 64

Set 2 ⇒ {4, 8, 12, 16} is a multiple of 4

11. Write down three **different whole numbers** so that:

- the median of the three numbers is 13,
- the range of the three numbers is 5.

+5

11, 13, 16

10, 13, [2]

+5

12, 13, 17

Range = Highest Value − Lowest Value

= 5

The three numbers are 12, 13 and 17.

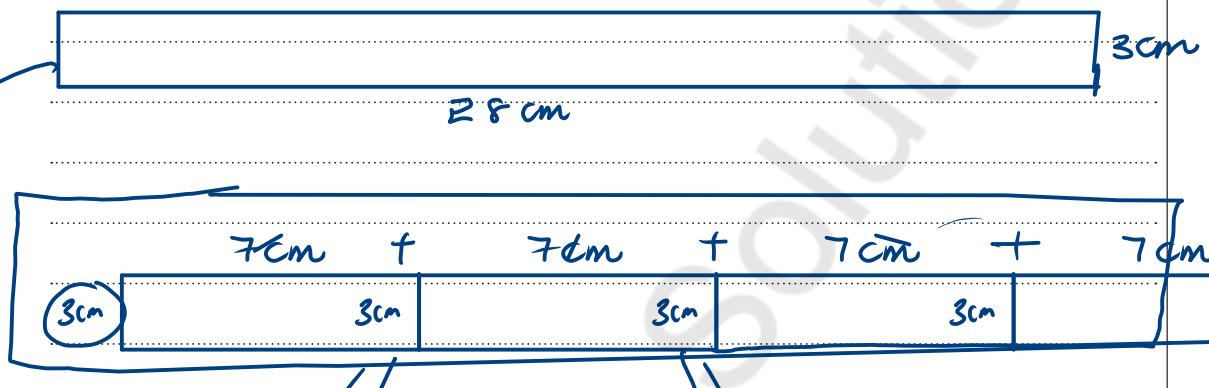
Examiner only

12. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

A rectangle is 7 cm long and 3 cm wide.
Jo puts four of these rectangles on a table.
They are joined together by the **short** sides of the rectangles to make one long rectangle.

What is the perimeter of the long rectangle that Jo has made? = 62 cm
You must draw a diagram of Jo's long rectangle and show all your working. [3 + 2 OCW]

Length = 7cm, Width = 3cm



Perimeter of a Rectangle = 2 (L + W)
= 2 (28cm + 3cm)
= 2 (31cm)
= 62 cm

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13. *(a)* What is the time 8 hours and 40 minutes after 11:38? [1]

11:38 am → 12:00 ⇒ 22 mins

12:00 +8 hours ⇒ 8:00 pm

40 mins − 22 mins ⇒ 18 mins ⇒

Time is 8:18 pm ⇒ 20:18 pm

(b) What is the time difference between 7:35 a.m. and 2:15 p.m. on the same day? Give your answer in hours and minutes. [1]

From 7:35 am to 12:00 ⇒ 4 hours : 25 mins

12:00 to 2:15 pm ⇒ 2 hours : 15 mins

4 hours + 2 hours and 25 mins + 15 mins

6 hours and 40 mins

Time difference is 6 hours and 40 minutes.

(c) Evaluate the time difference between 7 minutes 15 seconds and 2 minutes 50 seconds. Give your answer in seconds. [2]

60 sec → 1 min 7 mins ⇒ 420 secs

x → 7 mins 7 min 15 sec ⇒ 420 secs + 15 secs = 435 secs

x = 7 × 60 2 mins 50 sec ⇒ 120 secs + 50 secs = 170 secs

x = 420 265 secs

Time difference is 265 seconds.

7:35 → 8:35 = 1 hr

8:35 → 9:35 = 2 hrs

9:15 → 10:15 = 3 hrs

10:35 → 11:35 = 4 hrs

11:35 − 12:00 = 25 mins

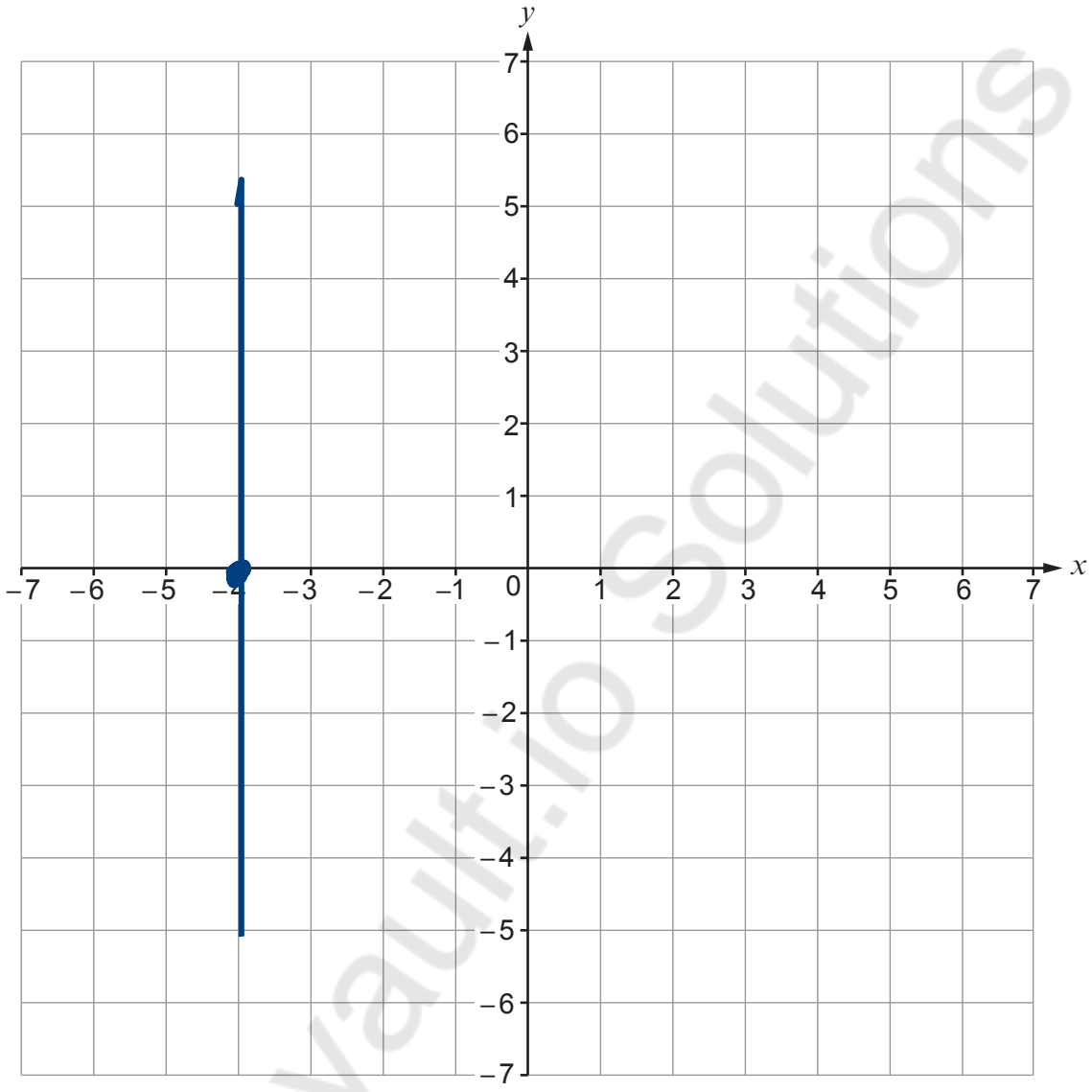
12:00 → 1:00 = 1 hr

1:00 → 2:00 = 2 hrs

2:00 → 2:15 = 15 mins

Examiner only

14. *(a)* Draw the line $x = -4$ on the grid below. [1]

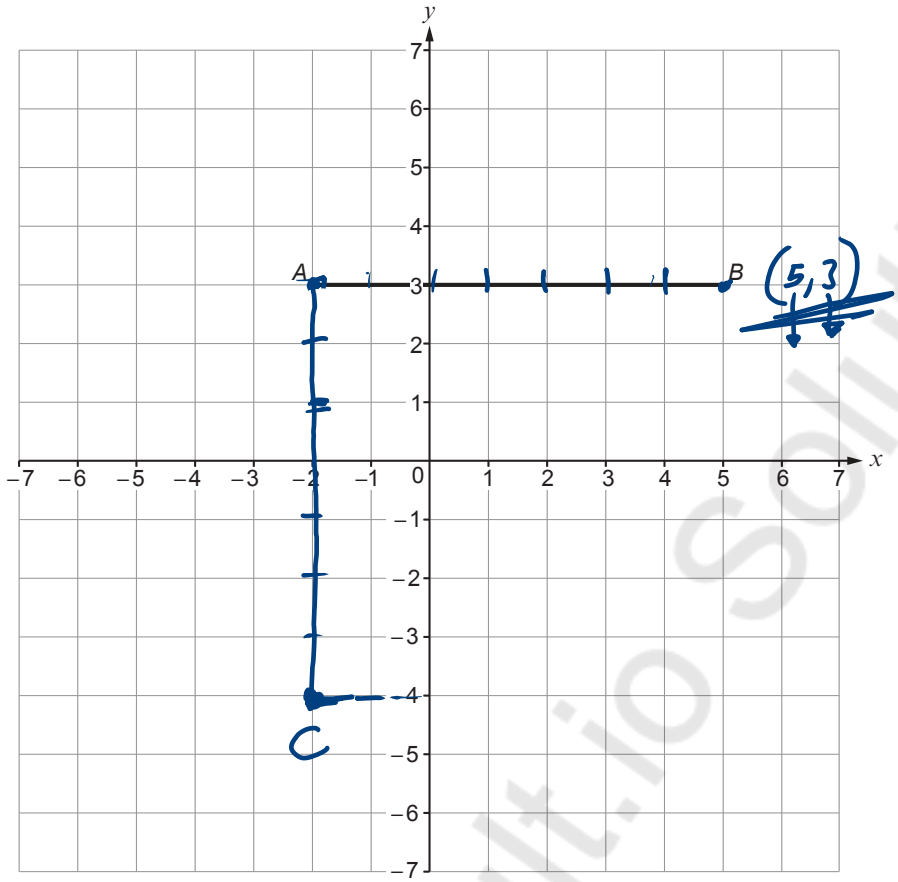


Examiner only

(b) *C* is a point on the grid below so that:

- $B\hat{A}C = 90°$,
- $AC = AB$.

(i) Show the position of point *C* **on the grid**. [2]



(ii) Write down the coordinates of point *C*. [1]

.....

Examiner only

15. Calculate each of the following.

(a) $3^3 \times 10^2$ [2]

$\Rightarrow (3 \times 3 \times 3) \times (10 \times 10)$

$\Rightarrow 27 \times 100 \Rightarrow 2700$

(b) 0.4×0.2 [1]

$04 \times 02 \Rightarrow 4 \times 2 \Rightarrow 08$

$0.4 \times 0.2 = 0.08$

(c) $\frac{4}{9} + \frac{5}{18}$ [2]

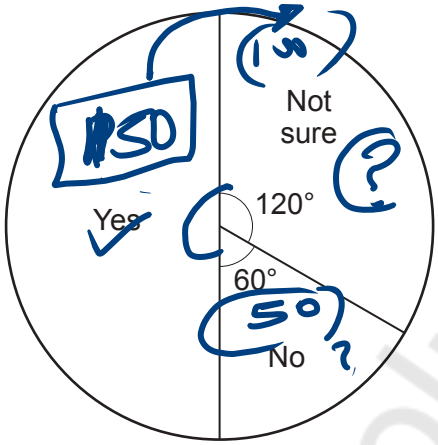
$\frac{4}{9} + \frac{5}{18} \Rightarrow \frac{4 \times 2}{9 \times 2} + \frac{5}{18}$

$\Rightarrow \frac{8}{18} + \frac{5}{18} = \frac{8+5}{18} = \frac{13}{18}$

Examiner only

16. 300 students were asked if they would like to change their school's dinner menu.

The pie chart below shows how they answered.



Complete the table below to show the number of students who gave each answer. [3]

Answer	Yes	No	Not sure
Number of students	150	50	

$\frac{90}{360} \times 300$

Yes $\rightarrow \frac{150}{360} \times 300 \rightarrow 30 \times 5$

$\rightarrow 150$

$\frac{60}{360} \times 300 = 50$

$\frac{120}{360} \times 300 = 20 \times 5$

$= 100$

Examiner only

17. *PQ* and *RS* are parallel.

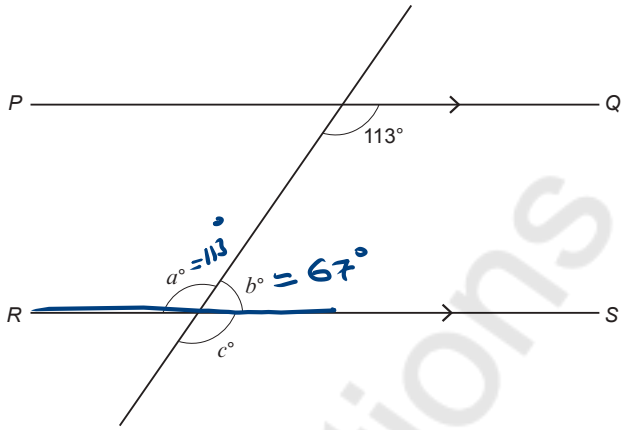


Diagram not drawn to scale

Find the values of a, b and c. [3]

$a° = 113°$ {Alt angle}

$a + b = 180$ → $113 + b = 180°$; $b = 180 - 113$

$b = 67°$ $c = a° = 113°$ {V.O.P}

$a =$ 113 $b =$ 67 $c =$ 113

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18. 80 cards are placed in a box.
Each card shows a picture of one of four islands near the coast of Wales:
Bardsey Island, Ramsey Island, Skomer Island or Puffin Island.

A card is chosen at random from the box.
The table below gives some of the probabilities that the chosen card shows a picture of a particular island.

Island	Bardsey Island *(Ynys Enlli)*	Ramsey Island *(Ynys Dewi)*	Skomer Island *(Ynys Sgomer)*	Puffin Island *(Ynys Seiriol)*
Probability	0·4	0·15	0·25	

How many of the 80 cards show a picture of Puffin Island?
You must show all your working. [4]

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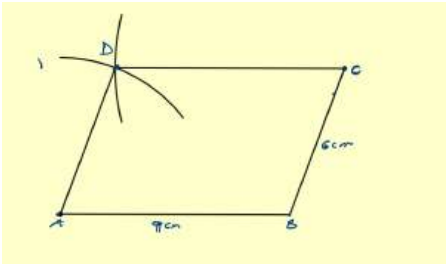
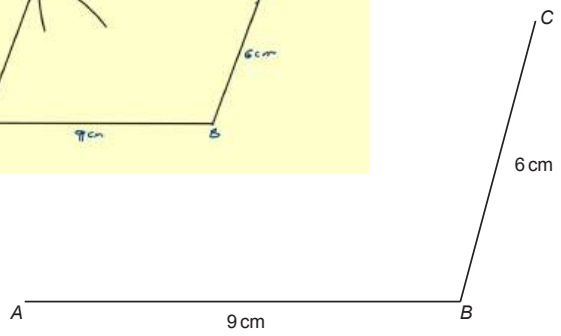
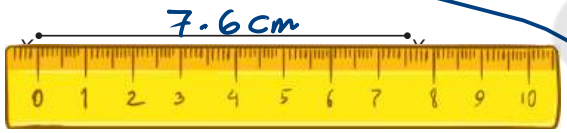
19. *(a)* Two sides of a parallelogram *ABCD* are drawn accurately below.
Using only a ruler and a pair of compasses, complete an accurate drawing of the parallelogram.
You must show all your construction arcs. [2]





(b) The line *XY* below forms part of a scale drawing of a garden.
The scale drawing has a scale of 1:200.

What is the actual distance between point *X* and point *Y* in the garden?
Give your answer in **metres**. [3]



Using a scale 1:200
Real life distance = Measured length × 200
= 7.6 × 200 = 1520 cm

Actual distance between point *X* and point *Y* = 15.2 metres

200 × 76
76
1200
1400
15200

1520
15.2

100 cm → 1 m
1520 cm → x

100x / 100 = 1520 / 100
x = 15.2

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20. You are given that $543 \times 17 = 9231$

(a) What is the value of 543×17?
Circle the correct answer. [1]

0·9231 9·231 92·31 923·1 9231

(b) What is the value of $\frac{9231}{54 \cdot 3}$?

Circle the correct answer. [1]

0·17 1·7 17 170 1700

(c) What is the value of $\frac{9231}{543 \times 17}$?

Circle the correct answer. [1]

0·1 1 10 100 1000

END OF PAPER

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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