Surname	Centre Number	Candidate Number
Other Names		0

GCSE

3300U10-1

A18-3300U10-1

MATHEMATICS
UNIT 1: NON-CALCULATOR
FOUNDATION TIER

MONDAY, 12 NOVEMBER 2018 – MORNING

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 continuation page at the back of the booklet. Question numbers must be given for all work written on the continuation 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 **6**, 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.	**5**	
2.	**2**	
3.	**2**	
4.	**1**	
5.	**1**	
6.	**5**	
7.	**2**	
8.	**3**	
9.	**2**	
10.	**3**	
11.	**3**	
12.	**2**	
13.	**2**	
14.	**6**	
15.	**5**	
16.	**4**	
17.	**4**	
18.	**3**	
19.	**3**	
20.	**1**	
21.	**6**	
Total	**65**	

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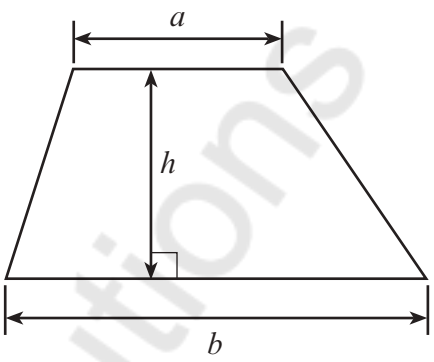
Formula List - Foundation Tier

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



Examiner only

1. *(a)* What number must be added to 186 to make 324? [1]

$x + 186 = 324$

$x = 324 - 186$

$x = 138$

$\begin{array}{r} {}^{2}{}^{11}{}^{1} \\ 324 \\ -\,186 \\ \hline 138 \end{array}$

Number is 138

(b) Divide 568 by 8. [1]

$\frac{568}{8} = 71$

$\begin{array}{r} 71 \\ 8\overline{)568} \end{array}$

(c) Add 986 and 75. [1]

$\begin{array}{r} {}^{1} \\ 986 \\ +\,75 \\ \hline 1061 \end{array}$

$= 1061$

(d) (i) Place one of **+**, **–**, **×** or **÷** in each space in the calculation below to make it correct. [1]

5 ..... 3 ..... 4 = 19

$5 \times 3 = 15 + 4 = 19$

× , +

(ii) Calculate 48 – 7 × 5. [1]

BODMAS $48 - (35)$ $\begin{array}{r} 48 \\ -\,35 \\ \hline 13 \end{array}$

ANS = 13

Examiner only

2. *(a)* Which metric unit is best used to measure the distance from Cardiff to Manchester? Circle the correct answer. [1]

millimetres kilometres metres litres centimetres

(b) Which metric unit is best used to measure the mass of a person? Circle the correct answer. [1]

kilograms grams tonnes kilometres milligrams

3. Jo thinks of a number.
Her number lies between 30 and 50.
Jo's number is a multiple of 3.
Jo's number is also a multiple of 7.

What number does Jo think of? [2]

3 | 3, 7
3 | 1, 7
7 | 1, 1

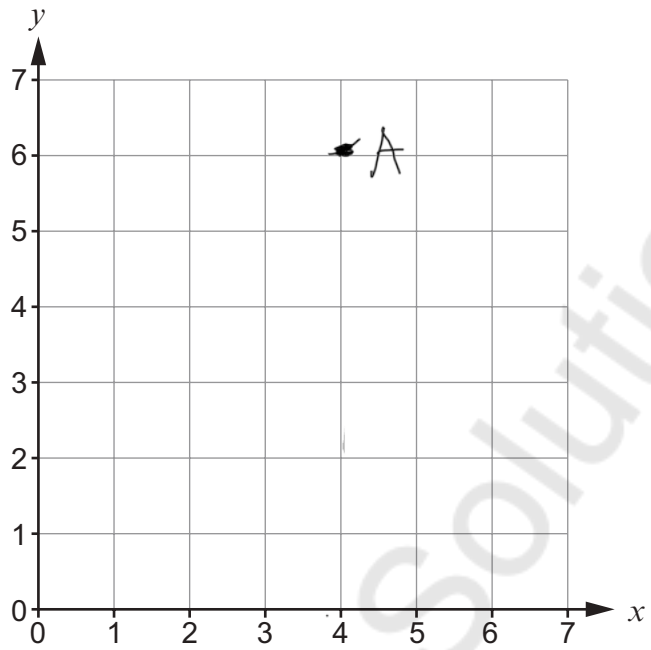
3 × 7 = 21

21, 42, 63

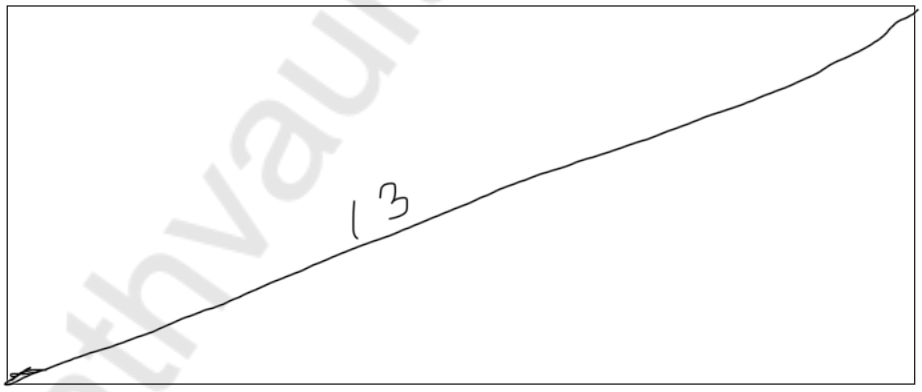
Jo's number is 42

Examiner only

4. On the grid below, plot the point A (4, 6). [1]



5. Measure the length of a **diagonal** of this rectangle.
Write down your answer in the space provided. [1]



Length of diagonal = ... 13 ..... cm

Examiner only

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

A journey takes 2 hours 35 minutes.
The journey finishes at 7 p.m.

At what time did it begin?
Write your answer in 24-hour clock time.
You must show all your working. [3 + 2 OCW]

Time the journey began

6 7 00 00
− 2 35 00
4 25 00 = 4:25 pm

= 16:25 pm

7. *(a)* Write 312 cm in metres. [1]

100 cm = 1 m = 312/100 = 3.12 m

312 cm = 3.12 m

(b) Write 9·07 km in metres. [1]

1000 m = 1 km 9.07 × 1000 = 9070

9·07 km = 9070 m

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8. *(a)* Mark has some cards. Each card has a number written on it.
These are Mark's cards.
The number on the last card is missing.

3	4	3	5	4	7	3	4	3

Write a number on the last card so that the mode of these numbers is an odd number. [1]

$3 - 3x$, $4 = 3x$

$= 3$

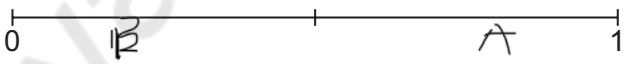
(b) Jane has a different set of cards.
These are Jane's cards.

2	2	4	7	9	15	15	21

Jane chooses a card at random from her set of cards.
On the probability scale below, mark the points A and B where:

(i) A is the probability of Jane choosing a number less than 10, [1]

(ii) B is the probability of Jane choosing the number 15. [1]



Total = 8

Less than 10 = 5

Probability $= \frac{5}{8}$

2 $\frac{2}{8} = \frac{1}{4}$

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9. *(a)* Work out $9 \times 0{\cdot}4$ [1]

$9 \times 4 = 36 \quad = 3.6$

Ans $= 3.6$

(b) Work out $17{\cdot}3 + 8{\cdot}6$ [1]

$$\begin{array}{r} {}^{1}17.3 \\ +\ 8.6 \\ \hline 25.9 \end{array} \quad = 25.9$$

10. Which of the following amounts is larger?

- 15% of £600, OR
- $\frac{1}{4}$ of £320

You must show all your working. [3]

15% of 600

15×600

100

315

$\times 6$

90

$\frac{1}{4}$ of 320 80

$\frac{1}{4} \times 320$ 160

$\frac{320}{4} = 80$

Larger amount is £ 90 or 15% of £600

Examiner only

11. In the diagram below,

- *ABCD* is a square,
- *ADE* is an equilateral triangle,
- *EAF* is a straight line.

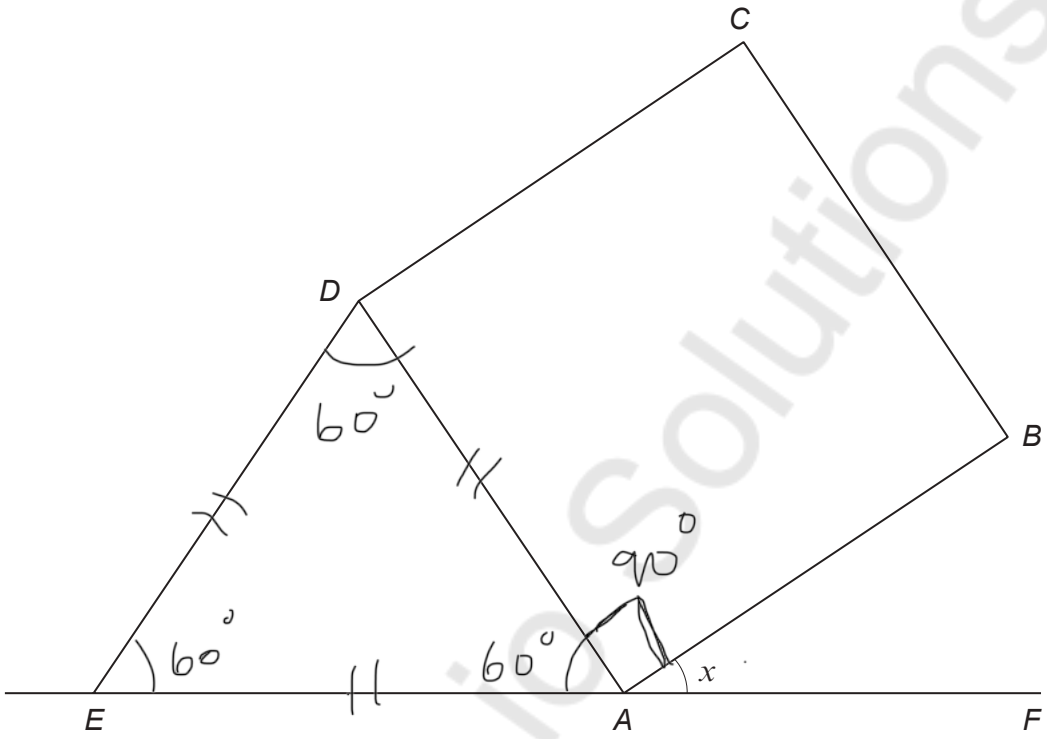


Diagram not drawn to scale

Calculate the size of angle x.
You must show all your working. [3]

$\hat{DAE} = 60°$

$\hat{BAD} = 90°$

Angle on a straight line $= 180°$

$60 + 90 + x = 180$

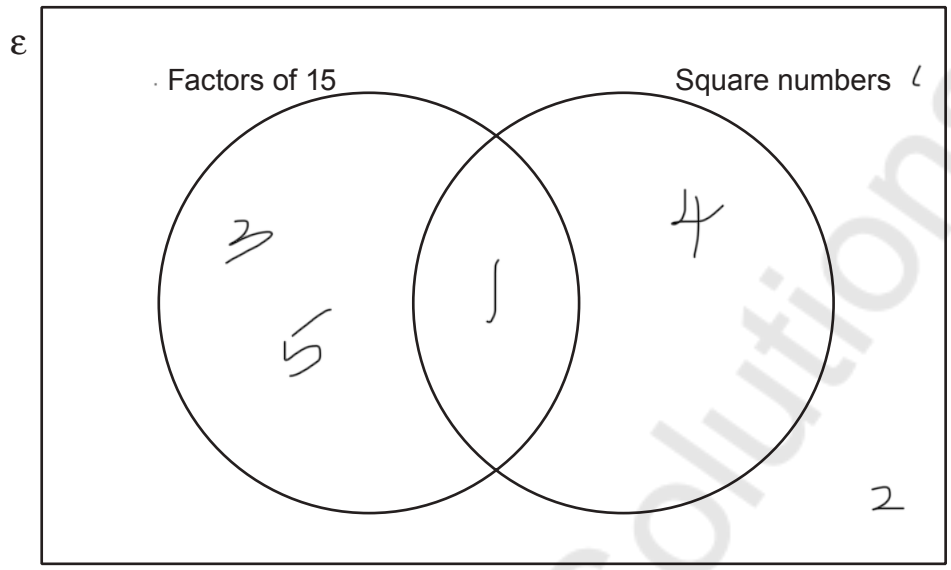
$x = 180 - 150$ $x =$ 30 °

60
90
150

180
−150
30

Examiner only

12. Place the numbers 1, 2, 3, 4, 5 in the Venn diagram below. [2]



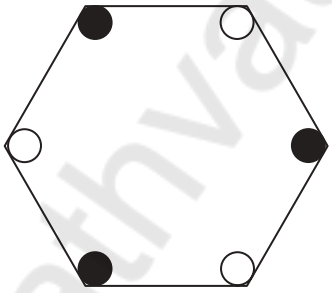
Space for working:

.....

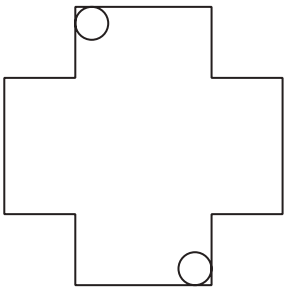
.....

.....

13. Write down the order of rotational symmetry for each of the following. [2]



3 .....



2 .....

Examiner only

14. *(a)* Simplify the expression $15x - 2y - 7x - 4y$. [2]

$(15x - 7x) - (2y - 4y)$

$8x - 6y = 2(4x - 3y)$

(b) Solve the equation $2m - 7 = 12$. [2]

$2m = 12 + 7$

$2m = 19$

$\frac{2m}{2} = \frac{19}{2}$

$m = \frac{19}{2} = 9.5$

(c) Calculate the value of $5f + 3g$ when $f = -4$ and $g = 7$. [2]

$5(-4) + 3(7)$

$(-20) + (21)$

$-20 + 21 = 1$

Examiner only

15.

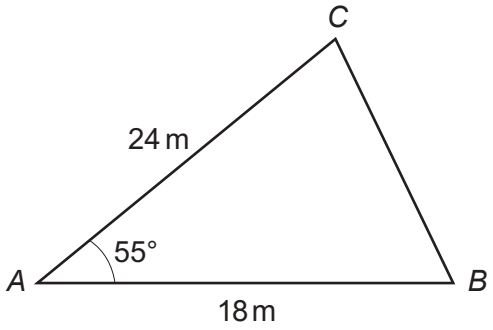


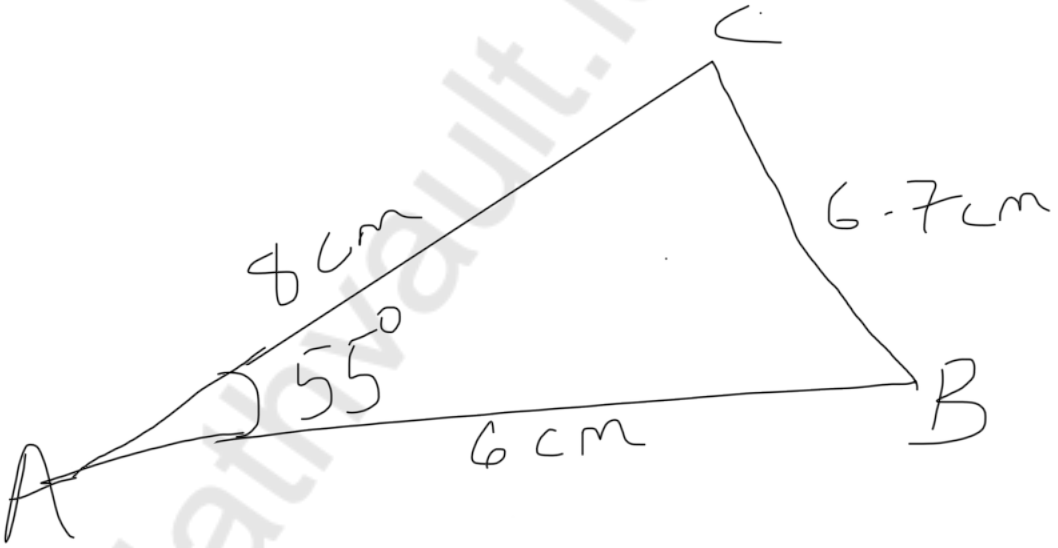
Diagram not drawn to scale

(a) Draw an accurate scale drawing of the triangle shown above.
Use the scale: [3]

1 centimetre represents 3 metres.

$AC = 24/3 = 8\text{cm}$

$AB = 18/3 = 6\text{cm}$



Examiner only

(b) Use your scale drawing to calculate the **actual** length of side *BC*.
Give your answer in metres. [2]

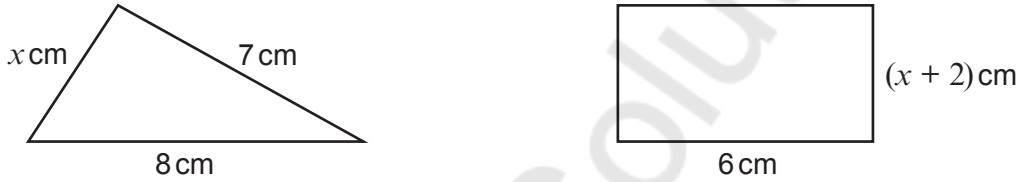
$BC = 6.7$

6.7×3

$\begin{array}{r} 67 \\ \times\ 3 \\ \hline 201 \end{array}$

Actual length of *BC* = 20.1 metres

16. A triangle and a rectangle are shown below.



Diagrams not drawn to scale

The perimeter of the triangle is 18 cm.

Calculate the area of the rectangle. [4]

$x + 7 + 8 = 18$

$x + 15 = 18$

$x = 18 - 15$

$x = 3\text{ cm}$

Area of rectangle = Length × width

$= 6 \times (3 + 2)$

$= 6 \times 5$

$= 30\text{ cm}^2$

Examiner only

17. *(a)* Estimate the answer to $\frac{59 \times 301}{1997}$.

You must show all your working. [2]

$\frac{300 \times 300}{2000} = 9$

(b) Given that $341 \times 57 = 19\,437$, write down the answer to each of the following.

(i) $3{\cdot}41 \times 5{\cdot}7$ [1]

$19.437 = 19.437$

(ii) $\frac{19\,437}{570}$ [1]

$\frac{19437}{570} = \frac{341 \times 57}{57 \times 10}$

$\frac{341}{10} = 34.1$

Examiner only

18. A box contains five identical balls numbered 1 to 5 respectively.
One ball is chosen at random from the box.
Its number is recorded and the ball is replaced in the box.

This process was carried out 75 times in total.

How many times would you expect an **even-numbered** ball to have been chosen?
You must show all your working. [3]

1 2 3 4 5

$\frac{2}{5}$ = Probability of picking an even ball

$\frac{2}{5} \times 75^{15}$

2×15 $\quad \overset{15}{\times 2}$

30

= 30 times

Examiner only

19. *(a)*

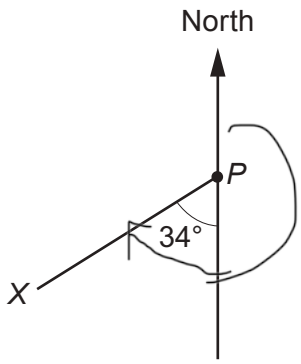
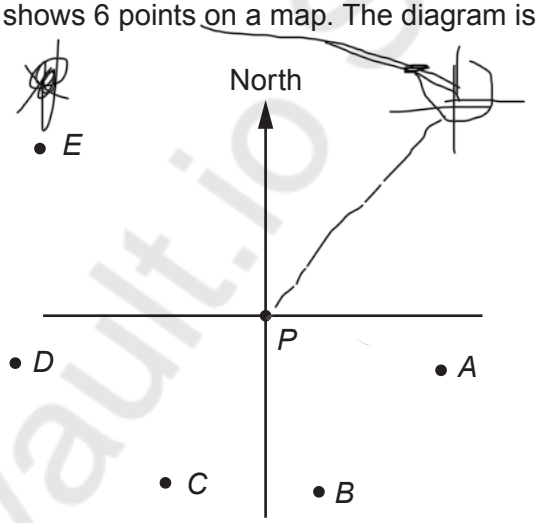


Diagram not drawn to scale

What is the bearing of *X* from point *P*?
Circle the correct answer. [1]

146° 326° 214° 034° 234°

(b) The diagram below shows 6 points on a map. The diagram is drawn to scale.



(i) A ship sails from point *P* on a bearing of 107°.
It sails towards one of the five points *A*, *B*, *C*, *D* or *E*.
Which of the five points is the ship sailing towards?
Circle the correct answer. [1]

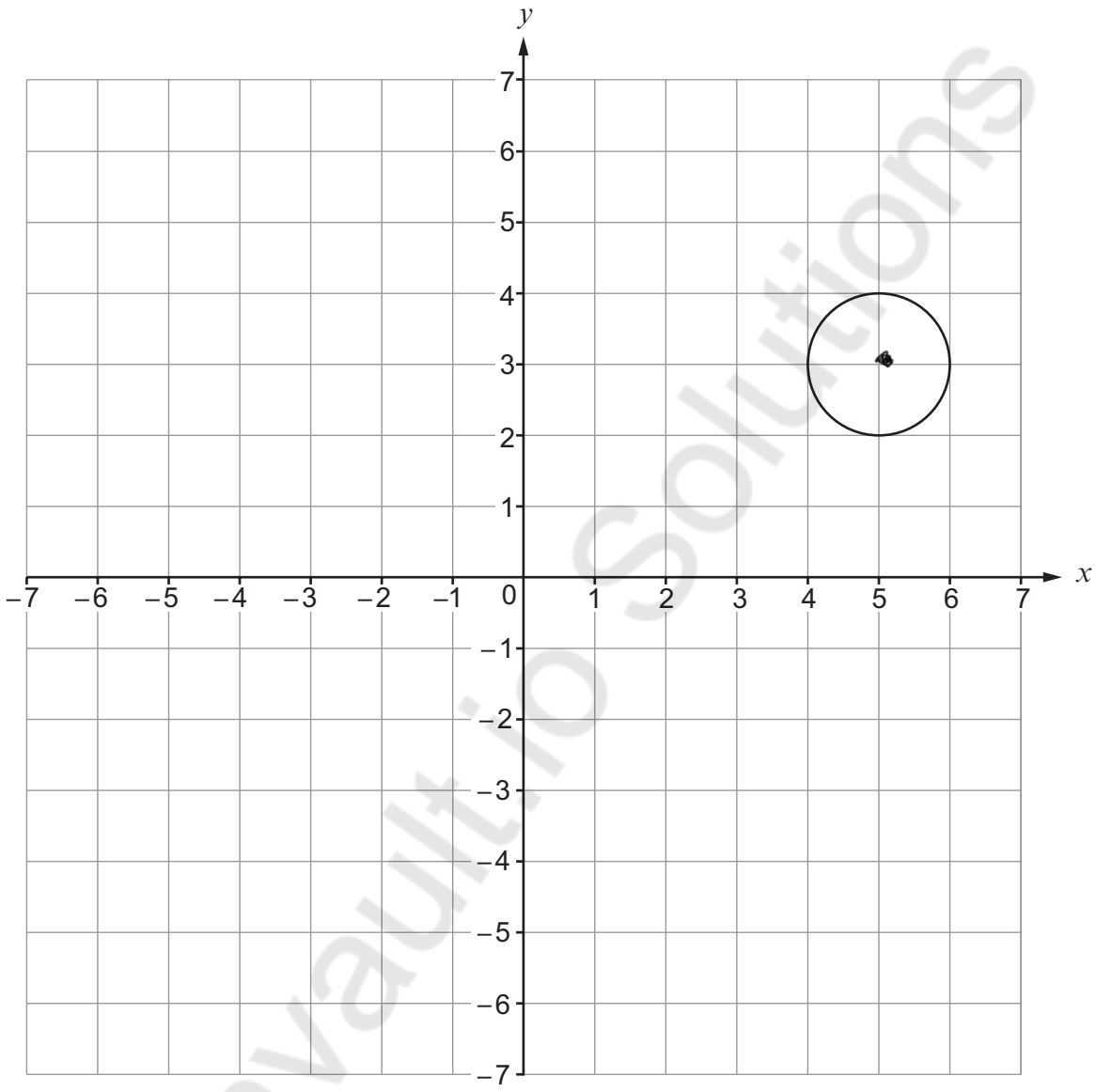
A *B* *C* *D* *E*

(ii) A second ship sails from point *P* for a number of miles on a bearing of 070°.
It then changes direction and sails on a bearing of 270°.
It is possible for the ship to reach **only one** of the five points *A*, *B*, *C*, *D* or *E*.
Which point can the ship reach?
Circle the correct answer. [1]

A *B* *C* *D* *E*

Examiner only

20. The circle shown below is rotated 90° anticlockwise about the origin.



What are the coordinates of the centre of the circle at its new position?
Circle the correct answer. [1]

(3, −5) (−5, −3) (−3, −5) (−3, 5) (3, 5)

Rotation Transformation Rule

$x, y \rightarrow -y, x$

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21.

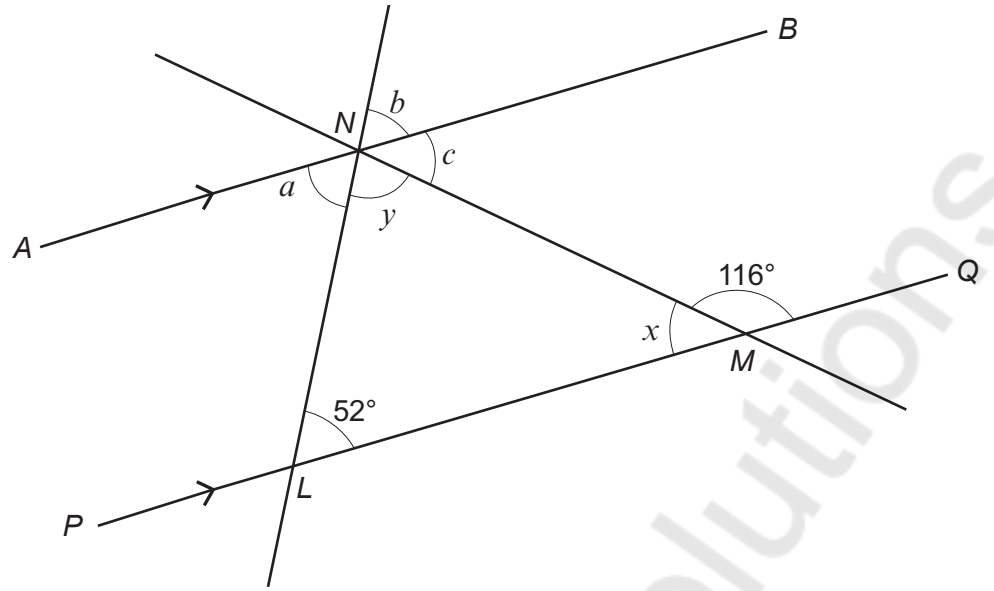

Diagram not drawn to scale

Line *AB* is parallel to line *PQ*.

(a) Find the size of each of the angles a, b and c. [3]

$a = 52^\circ$ (alternate)

$b = 52^\circ$ (opposite)

$c = x$

$x + 116 = 180^\circ$

$c = x = 64$

$180 - 116 = 64$

$a =$ 52 ° $b =$ 52 ° $c =$ 64 °

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(b) Find the size of each of the angles x and y.
Hence give the special name for triangle *LMN*. [3]

$x + y + 52 = 180$

$64 + y + 52 = 180$

$y = 180 - (64 + 52)$

$y = 180 - 116 = 64$

$64 \quad 180$
$52 \quad -116$
$\overline{\quad\quad}$
$116 \quad 64$

$x =$ 64 ° $y =$ 64 °

The special name for triangle *LMN* is Isosceles

END OF PAPER

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

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