Write your name here

Surname	Other names

Pearson Edexcel International Lower Secondary Curriculum

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Year 9
Achievement Test

Thursday 1 June 2017 – Afternoon
Time 1 hour 20 minutes

Paper Reference
LMA01/01

You must have:
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use black ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Calculators are allowed.

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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P 4 8 4 3 8 A 0 1 2 0

Pearson

SECTION A

Answer ALL questions.

In Section A put a cross in one box ☒ to indicate your answer. If you change your mind, put a line through the box ☒ and then put a cross in another box ☒.
Each question in Section A is worth one mark.

1 Find the median of 37, 53, 41, 48, 37, 59, 26

37	41	43	48
☒	☒	☒	☒

2 Which decimal is equivalent to $\frac{4}{5}$?

0.45	0.8	1.25	4.5
☒	☒	☒	☒

3 This shape is made from a square and a rectangle.

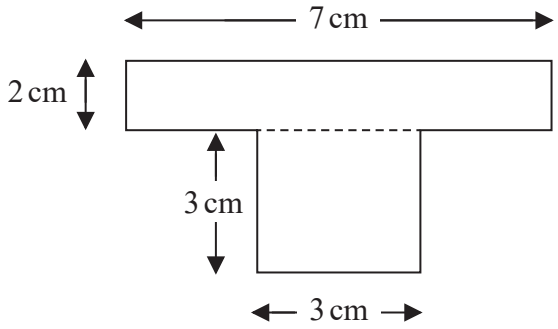

Diagram **NOT** accurately drawn

What is the perimeter of this shape?

15 cm	23 cm	24 cm	30 cm
☒	☒	☒	☒

4 Find the value of $3a + 4b$ when $a = 7$ and $b = 5$

19	41	43	82
☒	☒	☒	☒

5 What is the volume of a cube with edge 4 cm?

$16\,cm^3$	$48\,cm^3$	$64\,cm^3$	$96\,cm^3$
☒	☒	☒	☒

6 The area of a shape is $240\,cm^2$.

What is this in mm^2?

$2.4\,mm^2$	$24\,mm^2$	$2400\,mm^2$	$24\,000\,mm^2$
☒	☒	☒	☒

7 A group of men and women took a test.

This two-way table shows some information about the test.

	Passed	Failed	TOTAL
Men	43		56
Women			
TOTAL	75		100

How many women failed the test?

12	13	25	32
☒	☒	☒	☒

8 A pie chart is drawn to show the hair colour of 200 pupils in a school.

40 pupils have brown hair.

What angle will the sector for brown hair be on the pie chart?

20°	36°	40°	72°
☒	☒	☒	☒

9 What is 280 as a product of its prime factors?

$1 \times 2 \times 2 \times 2 \times 5 \times 7$ ☒ $2 \times 2 \times 2 \times 5 \times 7$ ☒ $2 \times 4 \times 5 \times 7$ ☒ $2 \times 2 \times 3 \times 5 \times 7$ ☒

---

10 What is the midpoint of $(4, -6)$ and $(-2, 14)$?

$(1, 4)$ ☒ $(1, 10)$ ☒ $(3, 4)$ ☒ $(3, 10)$ ☒

---

11 What name is given to a straight line that goes from the centre to the circumference of a circle?

Radius ☒ Tangent ☒ Diameter ☒ Chord ☒

---

12 Expand and simplify

$$-12(3m - 2) - 10 + 2m$$

$-38m - 14$ ☒ $-34m - 14$ ☒ $-34m + 14$ ☒ $-38m + 14$ ☒

---

13 Round 0.025 701 009 to 2 decimal places.

0.02 ☒ 0.03 ☒ 0.025 ☒ 0.026 ☒

---

14 Find the value of $(4h + 3)^2$ when $h = 2$

22 ☒ 90 ☒ 121 ☒ 2025 ☒

---

15 Find the value of

$$3^3 + (8 - 3) \times 4$$

29 ☒ 47 ☒ 56 ☒ 128 ☒

---

16 The frequency table below shows the number of marks scored on a test.

Number of marks	Frequency
0 – 19	31
20 – 39	14
40 – 59	28
60 – 79	27

What is the modal class of the number of marks?

0 – 19 ☒ 20 – 39 ☒ 40 – 59 ☒ 60 – 79 ☒

---

17 What is 1 357 000 000 in standard form?

1.357×10^{-9} ☒ 1.357×10^{-6} ☒ 1.357×10^{6} ☒ 1.357×10^{9} ☒

---

18 The price of a games console has been reduced by 20% in a sale.

The sale price is \$360

How much did the games console cost before it was reduced in the sale?

\$288 ☒ \$300 ☒ \$432 ☒ \$450 ☒

---

19 What is the nth term of this sequence?

$$4,\ 16,\ 36,\ 64,\ 100,\ \ldots$$

$(4n)^2$ ☒ $n^2 + 4$ ☒ $4n^2$ ☒ $12n - 8$ ☒

---

20 Factorise fully

$$28x^2 + 16xy + 8x$$

$x(28x + 16y + 8)$ ☒ $2x(14x + 8y + 4)$ ☒ $4x(7x + 4y + 2)$ ☒ $8x(4x + 2y + 1)$ ☒

---

21 A book is 25 cm long to the nearest centimetre.

What is the minimum possible length of the book?

24 cm ☒ 24.5 cm ☒ 24.95 cm ☒ 25 cm ☒

---

22 Simplify

$$f^8 \times f^4$$

f^2 ☒ f^4 ☒ f^{12} ☒ f^{32} ☒

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

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23 One counter is taken at random from a bag.

The probability that the counter is red is $\frac{1}{5}$

The probability that the counter is blue is $\frac{7}{10}$

The rest of the counters are green.

What is the probability that the counter is green?

$\frac{1}{10}$	$\frac{7}{15}$	$\frac{8}{15}$	$\frac{9}{10}$
☒	☒	☒	☒

24 What is the length of the unknown side in this triangle to one decimal place?

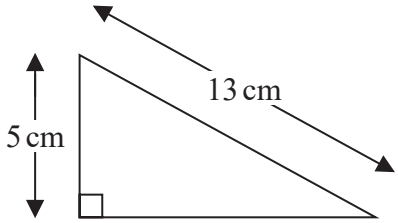


Diagram **NOT** accurately drawn

6.0 cm	8.0 cm	12.0 cm	13.9 cm
☒	☒	☒	☒

25 Round 7.157 901 2 to 3 significant figures.

7.15	7.16	7.157	7.158
☒	☒	☒	☒

26 A regular polygon has exterior angles of 60°

What is the sum of the polygon's interior angles?

180°	360°	540°	720°
☒	☒	☒	☒

27 Factorise

$$y^2 - 49$$

$y(y-7)$ ☒ $y(y-49)$ ☒ $(y-7)(y-7)$ ☒ $(y-7)(y+7)$ ☒

28 The area of a shape is 24 cm^2.

The shape is then enlarged by a scale factor of 3

What is the area of the enlarged shape?

72 cm^2 ☒ 142 cm^2 ☒ 216 cm^2 ☒ 648 cm^2 ☒

29 A fair, 6-sided die has faces that are numbered 1, 2, 3, 4, 5 and 6

The die is rolled twice.

What is the probability of getting a 2 on both rolls?

$\frac{2}{6}$ ☒ $\frac{4}{6}$ ☒ $\frac{1}{36}$ ☒ $\frac{4}{36}$ ☒

30 Find the value of $64^{-\frac{2}{3}}$

$\frac{1}{16}$ ☒ -16 ☒ $\frac{1}{512}$ ☒ -512 ☒

TOTAL FOR SECTION A IS 30 MARKS

SECTION B

Answer ALL questions.
You must show all your working.

31 Here are the first five terms of an arithmetic sequence.

7, 12, 17, 22, 27, …

(a) What are the next 2 terms in the sequence?

.....

(1)

(b) What is the nth term of the sequence?

.....

(2)

(c) What is the 50th term of the sequence?

.....

(1)

(Total for Question 31 is 4 marks)

32 (a) What is the Lowest Common Multiple (LCM) of 16 and 24?

.....

(1)

(b) What is the Highest Common Factor (HCF) of 16 and 24?

.....

(1)

(Total for Question 32 is 2 marks)

33 (a) A triangle has one angle of 45° and another angle of 65°

What is the size of the third angle in this triangle?

.....°

(2)

(b) A pentagon has two right angles and two angles of 110°

What is the size of the fifth angle in this pentagon?

.....°

(2)

(Total for Question 33 is 4 marks)

34 (a) Expand

$$4(6f - 3)$$

.....

(1)

(b) Factorise fully

$$6y^2 + 33y$$

.....

(1)

(c) Solve

$$4k - 9 = 40$$

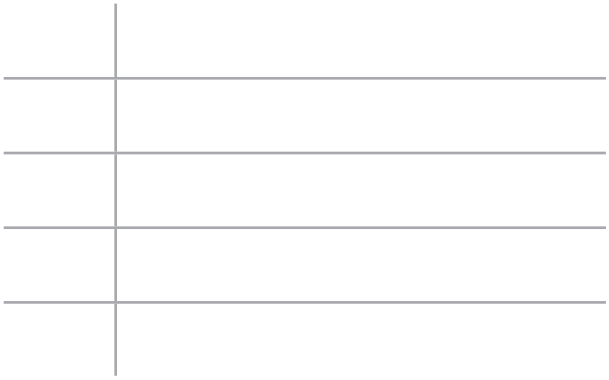
$k =$ .....

(2)

(Total for Question 34 is 4 marks)

35 Record the following data in an ordered stem and leaf diagram below.

35, 63, 45, 45, 56, 49, 31, 65, 50, 65, 43, 61



Key:

(Total for Question 35 is 3 marks)

36 Ewan, Renee and Zakir share \$300 in the ratio 8 : 4 : 3

How much does Renee get?

\$ .....

(Total for Question 36 is 2 marks)

37 (a) What is 12 out of 40 as a percentage?

..... %

(1)

(b) Decrease 60 kg by 15%.

..... kg

(1)

(c) Convert the recurring decimal 0.14141414141… into a fraction.

Show all of your working.

.....

(2)

(Total for Question 37 is 4 marks)

38 (a) A circle has diameter 12 cm.

(i) What is the circumference of the circle?

..... cm

(1)

(ii) What is the area of the circle?

..... cm^2

(1)

(b) A shape is made by putting a semicircle on top of a square with side 12 cm.

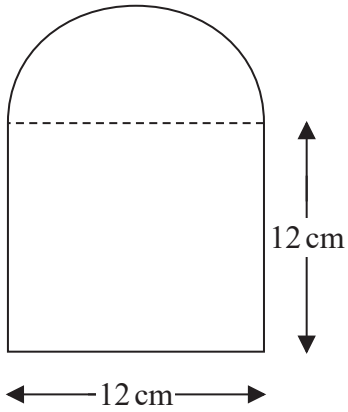


Diagram **NOT** accurately drawn

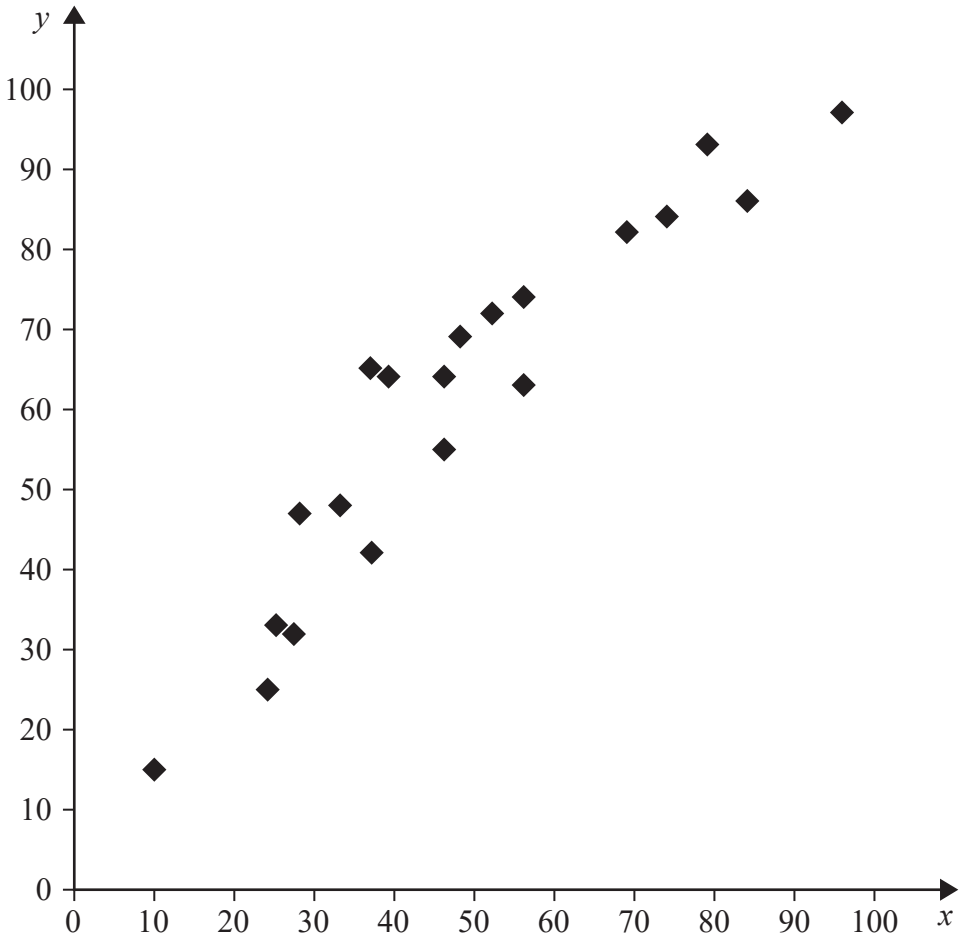
What is the perimeter of this shape?

..... cm

(2)

(Total for Question 38 is 4 marks)

39 What type of correlation is shown on the scatter diagram below?



.....

(Total for Question 39 is 1 mark)

40 (a) Work out the length of the unknown side of this triangle.

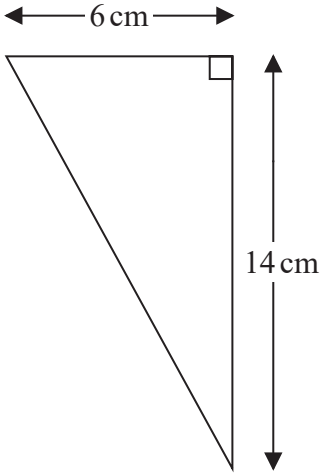


Diagram **NOT** accurately drawn

..... cm

(2)

(b) Work out the length of the side labelled h in this triangle.

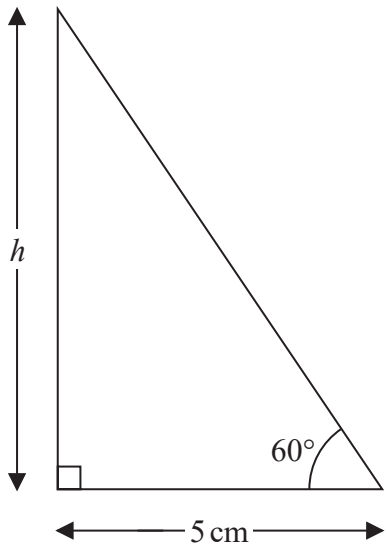


Diagram **NOT** accurately drawn

..... cm

(2)

(Total for Question 40 is 4 marks)

41 (a) Make t the subject of the formula

$$C = 4t + 3$$

$t =$ .....

(1)

(b) Solve $4x + 3 < 18$

.....

(2)

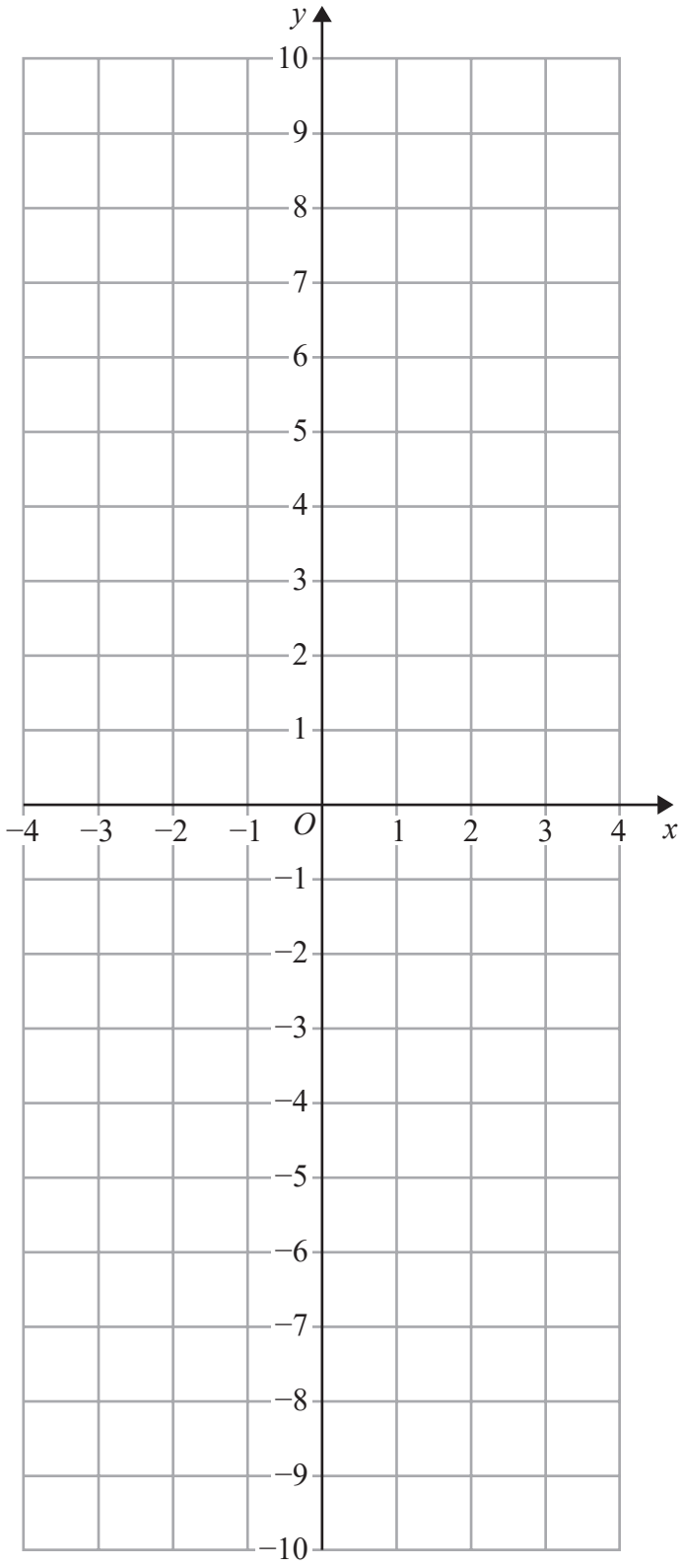
(c) Write as a single fraction $\frac{3a}{5} + \frac{2a}{7}$

.....

(2)

(Total for Question 41 is 5 marks)

42 Draw the straight line graph with gradient of 2 and intercept at −1 on the y-axis.



(Total for Question 42 is 2 marks)

43 Work out an estimate of the mean height from this grouped frequency table.

Height (cm)	Frequency
$100 \leqslant h < 120$	4
$120 \leqslant h < 140$	9
$140 \leqslant h < 160$	11
$160 \leqslant h < 180$	6

..... cm

(Total for Question 43 is 3 marks)

44 (a) Write $\frac{g^7 \times g^3}{g^6}$ as a single power of g

.....

(2)

(b) What is the value of 25^0?

.....

(1)

(c) Work out

$$\left(3.1 \times 10^5\right) \times \left(4.2 \times 10^2\right)$$

Give your answer in standard form.

.....

(2)

(Total for Question 44 is 5 marks)

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45 A packet contains 500 seeds.

The probability that each seed germinates is 0.95

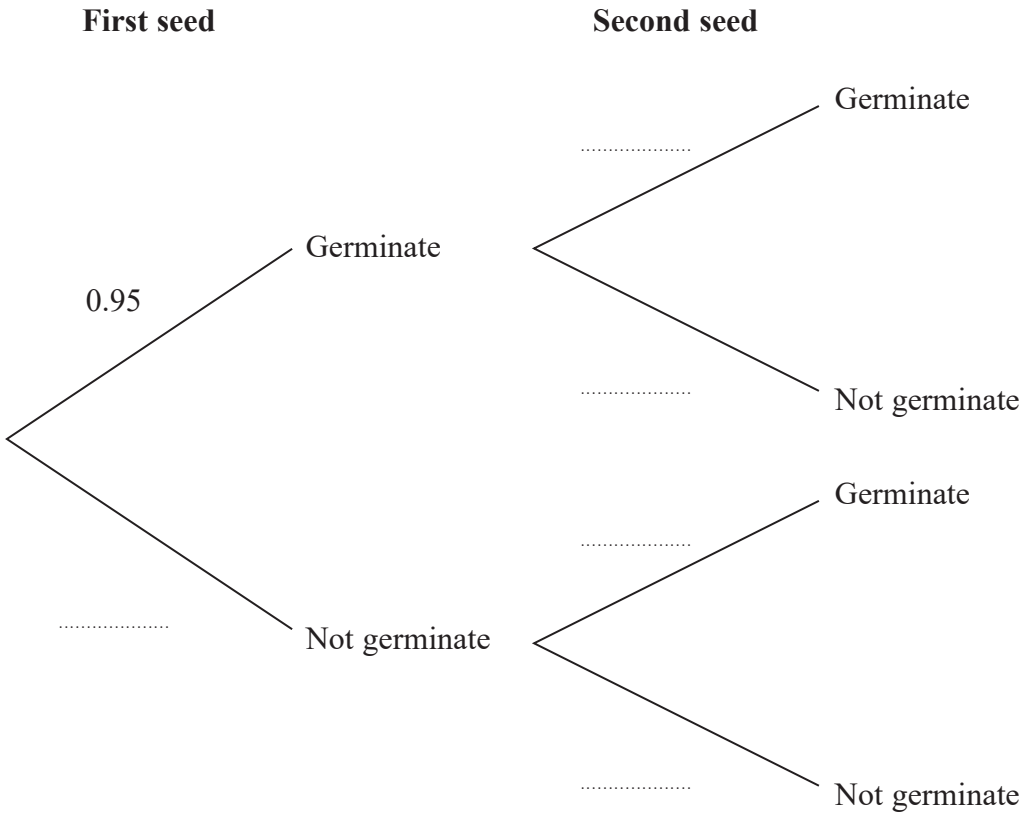
(a) How many of the seeds are expected to germinate?

.....

(1)

(b) Brian plants two of the seeds.

Complete the tree diagram to show the probability that they germinate.



(2)

(Total for Question 45 is 3 marks)

TOTAL FOR SECTION B IS 50 MARKS
TOTAL FOR PAPER IS 80 MARKS