**Pearson Edexcel
International Lower
Secondary Curriculum**

Centre Number

Candidate Number

Mathematics
**Year 9
Achievement Test**

Friday 3 June 2016 – Afternoon
Time 1 hour 20 minutes

Paper Reference
LMA01/01

You must have:
Ruler graduated in centimetres and millimetres, protractor, compasses, mirror, pen, HB pencil, eraser. 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

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   Arif and Carl share £60 in the ratio 3:2

How much money does Arif receive?

£12	£20	£24	£36
☒	☒	☒	☒

2   Dave rolls a fair 6-sided dice whose sides are numbered 1, 2, 3, 4, 5 and 6

What is the probability that he rolls a number that is 5 or more?

$\frac{1}{5}$	$\frac{1}{6}$	$\frac{2}{6}$	$\frac{5}{6}$
☒	☒	☒	☒

3   What is the size of angle a in the diagram?
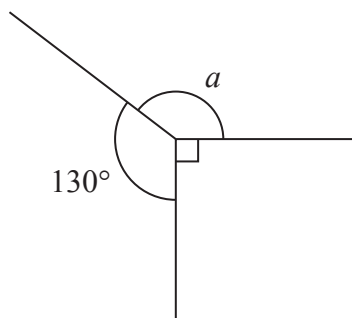
Diagram **NOT** accurately drawn

115°	130°	140°	230°
☒	☒	☒	☒

4   Find the value of $3a + 4b$ when $a = 5$ and $b = 2$

14	23	38	77
☒	☒	☒	☒

5 Which of these values is the greatest?

        0.4 $\dfrac{1}{3}$ $\dfrac{3}{10}$ 37%

        ☒   ☒   ☒   ☒

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6 The two-way table shows the grades that students were awarded in an exam.

	Grade A	Grade B	Grade C	Total
Boys	14	23	17	54
Girls	16	21	14	51
Total	30	44	31	105

How many girls were **not** awarded a Grade A?

        14   35   37   88

        ☒   ☒   ☒   ☒

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7 Factorise fully $4m + 12$

        $2(2m + 6)$ $2(2m + 12)$ $4(m + 3)$ $4(m + 12)$

        ☒   ☒   ☒   ☒
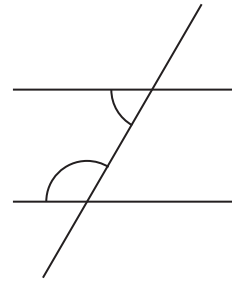
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8 The coordinates of the point A are (3, –5).
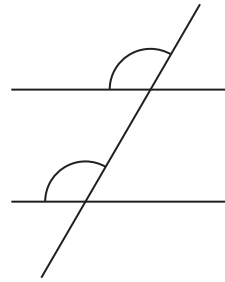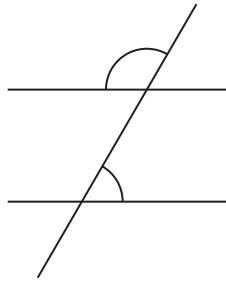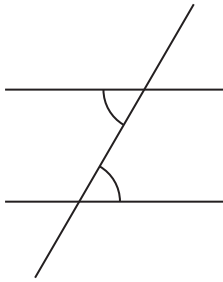
The coordinates of the point B are (–5, 11).

What are the coordinates of the midpoint of AB?

        (–4, –8)   (–1, 3)   (–2, 6)   (4, 8)

        ☒   ☒   ☒   ☒

9 Which of these diagrams shows a pair of alternate angles?

☒   ☒   ☒   ☒

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10 A circle has a diameter of 9 cm.

What is the area of the circle to the nearest cm² ?

    14 cm²   28 cm²   64 cm²   254 cm²

      ☒   ☒   ☒   ☒

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11 Expand and simplify $\quad 10 - 4(2f - 1)$

    $6 - 8f$ $9 - 8f$ $12f - 6$ $14 - 8f$

      ☒   ☒   ☒   ☒

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12 Round 4.60876 to 3 decimal places.

    4.60   4.61   4.608   4.609

      ☒   ☒   ☒   ☒

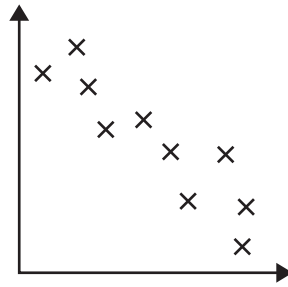**13** What type of correlation is shown on the scatter graph?

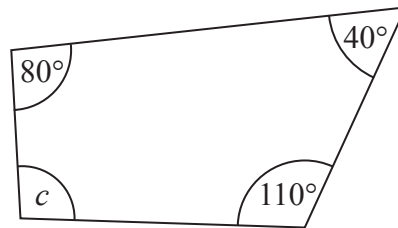Negative   Straight   Positive   Indirect

☒   ☒   ☒   ☒

14 What is the size of angle c in the diagram?

Diagram **NOT** accurately drawn

70°   100°   130°   140°

☒   ☒   ☒   ☒

15 Find the value of

$$\frac{4 + 3 \times 6}{2} + 8$$

15   19   25   29

☒   ☒   ☒   ☒

16 Make d the subject of this formula.

$$t = \frac{2d + 3}{4}$$

$d = \dfrac{4t - 3}{2}$ $d = 2(4t - 3)$ $d = \dfrac{\left(\dfrac{t}{4} - 3\right)}{2}$ $d = \dfrac{4t + 3}{2}$

☒   ☒   ☒   ☒

17 The cost of a television is reduced by 20% in a sale.

It now costs $1200

What was the original cost of the television?

$960 ☒ $1000 ☒ $1440 ☒ $1500 ☒

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18 The weights of some parcels are shown in the frequency table.

Weight (w) in kg	Frequency
$0 < w \leqslant 5$	6
$5 < w \leqslant 10$	11
$10 < w \leqslant 15$	14
$15 < w \leqslant 20$	13
$20 < w \leqslant 25$	9
$25 < w \leqslant 30$	3
$30 < w \leqslant 35$	1

What is the modal class of this data?

$10 < w \leqslant 15$ ☒ $15 < w \leqslant 20$ ☒   13 ☒   14 ☒

---

19 Find the nth term of the sequence   4, 7, 12, 19, 28, ...

$3n^2 + 13n + 1$ ☒ $2n^2$ ☒ $n^2 + n$ ☒ $n^2 + 3$ ☒

---

20 A semicircular window has a radius of 60 cm.

What is the perimeter of the window to the nearest 10 cm?

190 cm ☒   310 cm ☒   570 cm ☒   690 cm ☒

21 The length of a path is measured as 36 m to the nearest metre.

What is the minimum possible length of the path?

35 m	35.5 m	35.95 m	36 m
☒	☒	☒	☒

22 When a football team play a match they can either win, lose or draw.

The probability that they win a match is $\dfrac{11}{20}$

The probability that they draw a match is $\dfrac{3}{10}$

What is the probability that they lose a match?

$\dfrac{1}{3}$	$\dfrac{3}{20}$	$\dfrac{17}{20}$	$\dfrac{17}{30}$
☒	☒	☒	☒

23 Round 1.9487 to 3 significant figures.

1.94	1.95	1.948	1.949
☒	☒	☒	☒

24 Solve the inequality $\quad 51 > 6h + 3$

$h > 7$	$h < 7$	$h > 8$	$h < 8$
☒	☒	☒	☒

25 A vehicle travelled 20 kilometres in 15 minutes.

What was the average speed of the vehicle?

1.33 km/h	60 km/h	80 km/h	300 km/h
☒	☒	☒	☒

26 The population of a country increases by 5%.

What is the original population multiplied by to obtain the new population?

0.05	0.95	1.05	1.5
☒	☒	☒	☒

27 A cylinder has a radius of 6 cm and a length of 10 cm.

What is the volume of the cylinder in terms of π?

60π cm³	120π cm³	360π cm³	1440π cm³
☒	☒	☒	☒

28 The ages of 19 people on a train are shown in the grouped frequency table.

Age (a) Years	Frequency
$0 \leqslant a < 20$	1
$20 \leqslant a < 40$	2
$40 \leqslant a < 60$	5
$60 \leqslant a < 80$	3
$80 \leqslant a < 100$	8

Which of these could be an estimate of the median age, in years?

3	5	50	70
☒	☒	☒	☒

29 Which of these is the equation of a line that is parallel to $y = 4x + 12$?

$y = 4x - 12$	$y = 12x + 4$	$y = 2x + 6$	$x = 4y + 12$
☒	☒	☒	☒

30 What is the value of $64^{\frac{3}{2}}$?

16	96	512	131072
☒	☒	☒	☒

SECTION B

Answer ALL questions.

You must show all your working.

31 (a) Expand $5(3f + 7)$

....

(1)

(b) Solve $4k - 7 = 28$

....

(2)

(c) Expand and simplify $(x + 3)(x - 4)$

....

(2)

(Total for Question 31 is 5 marks)

32 Look at the grid below.
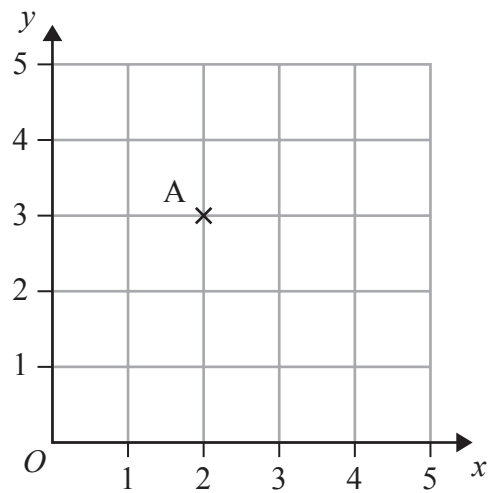
(a) Write down the coordinates of the point A.

(..................................... , ...)

(1)

(b) Plot the point (4, 0) on the grid.

Label it B.

(1)

(Total for Question 32 is 2 marks)

33 (a) What is the mean of 9, 6, 7, 4, 5?

....

(1)

(b) The times taken by 228 people to run a race are shown in the table.

Time (t) in minutes	Frequency
$10 < t \leqslant 12$	36
$12 < t \leqslant 14$	97
$14 < t \leqslant 16$	55
$16 < t \leqslant 18$	25
$18 < t \leqslant 20$	15

Calculate an estimate of the mean time taken to run the race.

You must show your working.

.... minutes

(3)

(Total for Question 33 is 4 marks)

34 (a) Write 126 as a product of its prime factors.

....

(2)

(b) Find the Highest Common Factor of 48 and 64

....

(2)

(c) Find the Lowest Common Multiple of 9, 15 and 24

....

(2)

(Total for Question 34 is 6 marks)

35 Reflect the shape in the mirror line.

mirror
line
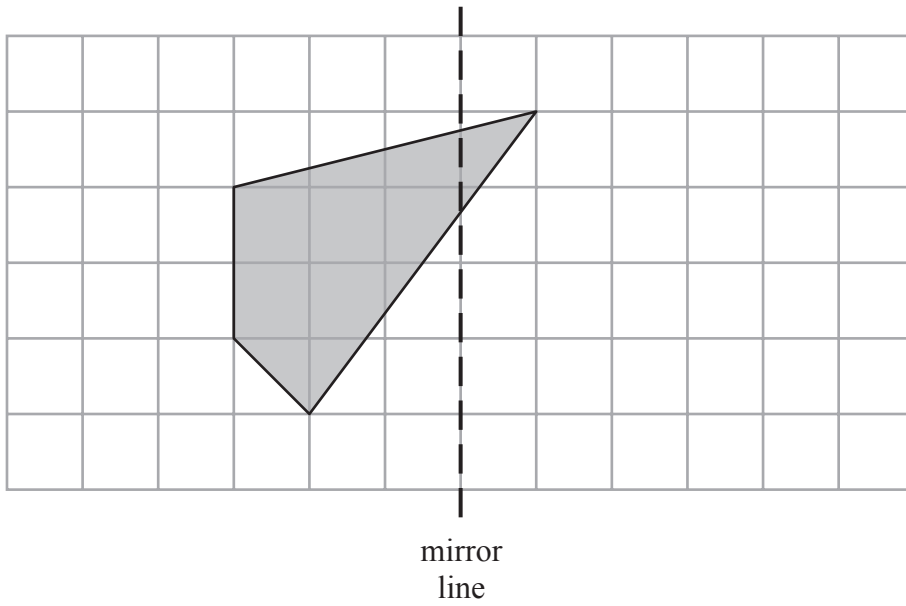
(Total for Question 35 is 1 mark)

36 (a) A rectangular garden has a length of 8 m and a width of 6 m.

The garden has a rectangular pond with a length of 3 m and width of 2 m.

The rest of the garden is covered with grass.

Find the area of the garden that is covered with grass.

.... m²

(1)

(b) A cuboid of volume 28 m³ has length of 8 m and width of 5 m.

Find the height of the cuboid.

You must state your units.

....

(2)

(Total for Question 36 is 3 marks)

37 (a) Write down the next two terms in the arithmetic sequence

$$14, 11, 8, 5, 2, \ldots$$

.... , ...
(1)

(b) Write down the first three terms in the sequence that has nth term of

$$4n + 2$$

.... , ... , ...
(1)

(c) What is the nth term of this arithmetic sequence?

$$1, 5, 9, 13, 17, \ldots$$

....
(1)

(Total for Question 37 is 3 marks)

38 Krishna's income is $400 per week.

She spends $40 per week on travel.

Krishna draws a pie chart to show how she spends her weekly income.

Calculate the angle in the sector for travel on her pie chart.

°
....

(Total for Question 38 is 2 marks)

39 A bag contains only green, blue and yellow beads.

One bead is taken from the bag at random.

The probability of taking a green bead from the bag is 0.47

The probability of taking a yellow bead from the bag is 0.2

(a) What is the probability that the bead is blue?

....

(1)

(b) Fatima takes a bead from the bag at random.

She records its colour and puts it back in the bag.

She does this 200 times.

How many times would you expect her to take a yellow bead?

....

(1)

(c) A different bag contains only 3 black beads and 2 white beads.

Two beads are taken from the bag at random.

Complete the probability tree diagram to show this information.

1st bead   **2nd bead**

$\frac{2}{4}$ black

$\frac{3}{5}$ black

.... white

.... black

.... white

white

(2)

(Total for Question 39 is 4 marks)

40 (a) What is the sum of the exterior angles on a regular pentagon?

.... °

(1)

(b) What is the sum of the interior angles in a regular pentagon?

.... °

(1)

(Total for Question 40 is 2 marks)

41 Write each expression as a single power of *a*.

(a) $a^6 \times a^8$

....

(1)

(b) $a^{10} \div a^7$

....

(1)

(c) $(a^5)^2$

....

(1)

(Total for Question 41 is 3 marks)

42 Solve these simultaneous equations.

$$6x + 4y = 43$$
$$2x - 3y = 23$$

You must show your working.

$x =$ ....

$y =$ ....

(Total for Question 42 is 3 marks)

43 Ahmed puts $200 into a savings account.

The account pays 4% compound interest per annum.

How much will Ahmed have in his account after 2 years?

$......................................

(Total for Question 43 is 2 marks)

44 (a) Write down the number 0.000 835 in standard form.

....
(1)

(b) Write down the number 3.2×10^5 as an ordinary number.

....
(1)

(c) Calculate $(7.4 \times 10^2) + (9.61 \times 10^3)$

Give your answer in standard form.

....
(2)

(Total for Question 44 is 4 marks)

45 What is the surface area of this triangular prism?

5 cm

Diagram **NOT**
accurately drawn

4 cm

6 cm

←3 cm→

.... cm²

(Total for Question 45 is 2 marks)

46 Find the value of *x* in this triangle.

x

14 cm   9 cm
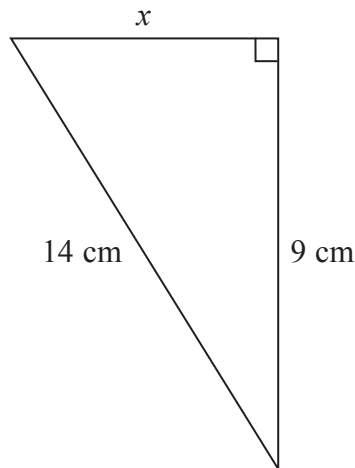
Diagram **NOT** accurately drawn

.... cm

(Total for Question 46 is 2 marks)

47 Calculate the area of the sector of a circle with a radius of 7 cm.

7 cm

55°

7 cm

Diagram **NOT** accurately drawn

.... cm²

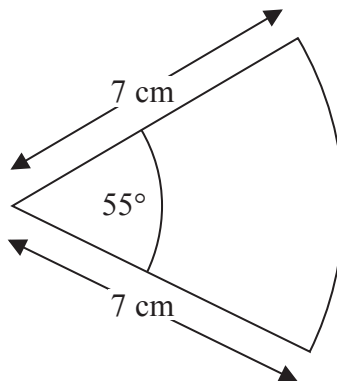**(Total for Question 47 is 2 marks)**

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

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