



# EXAM PAPERS PLUS

## **11+ Mathematics**

**Grammar Schools**

**Paper 4**

**50 minutes**

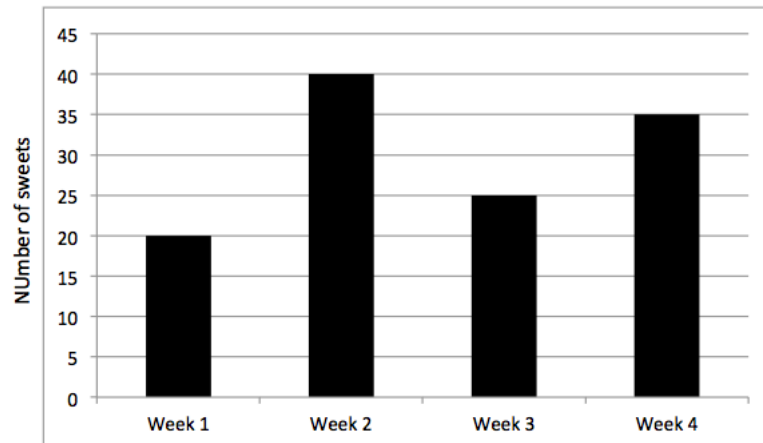
**50 marks**

**2017-2018 Edition**

- *You will need a pencil and a ruler.*
- *Calculators are not allowed.*
- *Use any spare space on the page for working out.*
- *Try to answer as many questions as you can.*
- *If you cannot do a question, leave it and move on to the next one.*
- *Include the appropriate unit in your answer if it is not provided.*

Either write your answer on the line provided or circle one correct answer from the choices A to E where appropriate.

- 1) The graph below shows the number of sweets that Joe ate over 4 weeks.



What is the mean number of sweets eaten by Joe per week?

- A** 20
- B** 30
- C** 35
- D** 40
- E** 15

- 2) Which number is closest to 1?

- A** 0.996
- B** 0.987
- C** 1.0101
- D** 1.005
- E** 0.989

**Turn Over**

3) Jim poured himself a cup of tea. How much liquid is likely to be in the cup?

- A 200 litres
- B 2.34 mm
- C 23,400 ml
- D 200 cm
- E 250 ml

4) Twelve million and two.

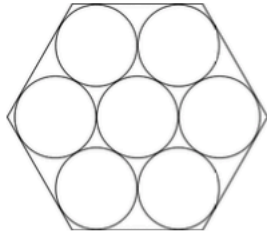
Which answer shows this written as a number?

- A 12,002,000
- B 12,000,002
- C 12,000,200
- D 12,000,020
- E 12,020,002

5) Shape A consists of identical circles placed inside a regular hexagon.

The area of Shape A is  $75 \text{ cm}^2$ .

If the area of Shape A not covered by circles is  $7.59 \text{ cm}^2$ , what is the area of each circle?



Shape A

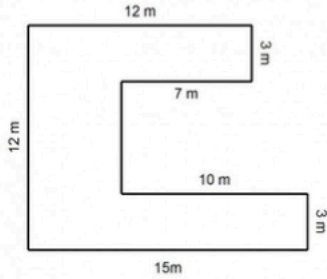
ANSWER: \_\_\_\_\_

6) Adam, Ben and Charlie shared out a prize of £108,000 in the ratio 2:4:3 respectively.  
How much did Ben receive?

- A £48,000
- B £24,000
- C £96,000
- D £32,000
- E £36,000

**Turn Over**

7) Calculate the area of this shape.



NOT DRAWN TO SCALE

ANSWER: \_\_\_\_\_

8)  $840 \times 36 = 30,240$   
What is  $420 \times 72$ ?

- A 7,560
- B 60,480
- C 30,240
- D 15,120
- E 22,680

9) A menu at a restaurant is shown below.

Item	Price
Meal 1	£12.20
Meal 2	£13.50
Meal 3	£12.00
Drink	£1.00

Alice orders Meal 1 and a drink. A 10% service charge is added to her total bill.  
How much change does Alice receive if she pays with a £50 note?

ANSWER: \_\_\_\_\_

**Turn Over**

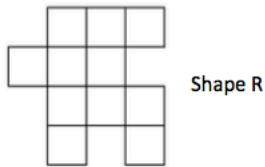
- 10) I square a number, add 1 and then cube it.  
 My answer is 125  
 What is the original number?

ANSWER: \_\_\_\_\_

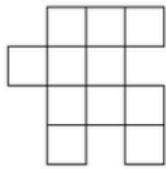
- 11) What happens to the volume of a cube if I double the length of each side?

- A** The volume doubles
- B** The volume is five times bigger
- C** The volume quadruples
- D** The volume is six times bigger
- E** The volume is eight times bigger

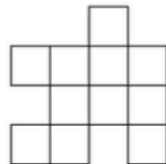
12)



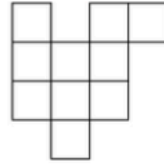
If I rotate Shape R 90° anti-clockwise, what will the result be?



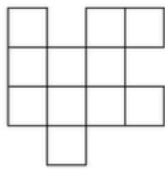
**A**



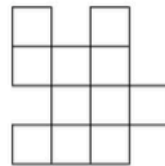
**B**



**C**



**D**



**E**

**Turn Over**

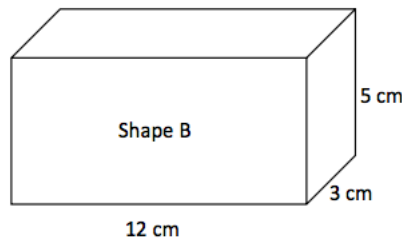
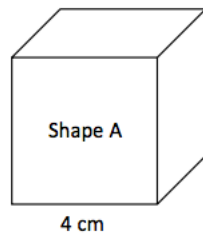
13) A card is 6 cm wide and 11 cm long. It is enlarged proportionally until the width measures 1 m 14 cm. What is the length of the enlarged card?

- A 1 m 87 cm
- B 211 cm
- C 111 cm
- D 2 m 9 cm
- E 3 m 1 cm

14) Shape A is a cube.

Shape B is a cuboid.

How much greater is the volume of Shape B than that of Shape A?



NOT  
DRAWN  
TO  
SCALE

ANSWER: \_\_\_\_\_

15) How many hours are there in a fortnight?

- A 336
- B 168
- C 504
- D 24
- E 96

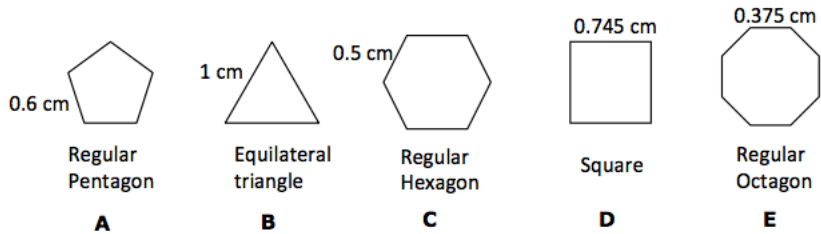
16) In Moscow, the temperature on Monday was 3°C. On Tuesday the temperature dropped by 12°C. On Wednesday, the temperature rose by 5°C.

What was the temperature in Moscow on Wednesday?

ANSWER: \_\_\_\_\_

**Turn Over**

17) Which shape has a different perimeter to the others?



18) Which of these events has an even chance of happening?

- A** Rolling a two on a fair dice.
- B** Choosing an even number at random from the numbers greater than 24 but less than 28.
- C** Rolling a prime number on a fair dice.
- D** Tossing a coin and getting either heads or tails.
- E** Being neither male nor female.

19) George will be  $x$  years old in 6 years' time.  
How old was George 4 years ago?

- A**  $x - 4$
- B**  $x + 6$
- C**  $x - 6$
- D**  $x + 10$
- E**  $x - 10$

20) Which of these makes a word when rotated through  $180^\circ$ ?

- A** HOB
- B** LOOT
- C** ON
- D** DUST
- E** BOB

21) Jane bakes a cake. She eats  $\frac{1}{2}$  immediately and then gives  $\frac{1}{4}$  of the remainder to her brother. What fraction of the whole cake is left?

ANSWER: \_\_\_\_\_

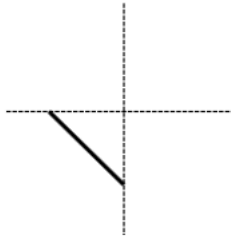
**Turn Over**

Paper 4, Page 8

22) Sam wishes to buy a new game. He saves £3.25 pocket money at the end of each week. If the game costs £27.50, how long must Sam wait before he can afford the game?

- A 7 weeks
- B 8 weeks
- C 9 weeks
- D 10 weeks
- E 11 weeks

23) The diagram below shows part of a shape and two of its lines of symmetry.



What is the name of the complete shape?

- A kite
- B hexagon
- C rectangle
- D regular pentagon
- E square

24) Here is part of a conversion table from feet to centimetres.

	feet to cm	cm to feet
1	30.48	0.033
2	60.96	0.066
3	?	0.099
4	121.92	0.132

E.g 1 foot = 30.48 cm

Which figure is missing from the table?

ANSWER: \_\_\_\_\_

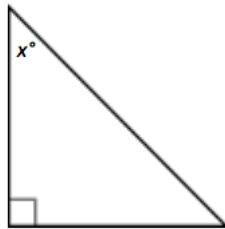
**Turn Over**



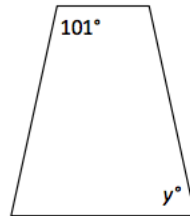
25) How many edges does a triangular prism have?

- A 3
- B 5
- C 7
- D 9
- E 11

26) Shape A is an isosceles triangle.  
Shape B is a regular trapezium.  
What is the difference between angle  $x$  and angle  $y$ ?



Shape A



Shape B

ANSWER: \_\_\_\_\_

27) Out of a group of 60 dogs, 16 have long tails.  
Approximately what proportion of the dogs have long tails?

- A  $\frac{2}{5}$
- B  $\frac{1}{2}$
- C  $\frac{3}{5}$
- D  $\frac{1}{4}$
- E  $\frac{1}{5}$

**Turn Over**

28)  $w$  is  $\frac{1}{3}$  of  $u$ .

Which of the following is correct?

- A**  $w = u$
- B**  $u = 3w$
- C**  $w \div u = 3$
- D**  $3u = w$
- E**  $w \div 3 = u$

29) I think of a number, divide by 7, multiply by 0 and then subtract 4.

What is my final answer?

ANSWER: \_\_\_\_\_

30) If  $3x + 4 = 9$ , what is  $3x - 4$ ?

- A** 9
- B** 5
- C** 0
- D** 1
- E** More information needed

31) Fred shears 27 sheep every day for the whole month of August.

How many sheep does Fred shear in total in August?

- A** 783
- B** 837
- C** 800
- D** 810
- E** 961

32) What fraction of 4 hours is 150 minutes?

- A**  $\frac{5}{8}$
- B**  $\frac{5}{6}$
- C**  $\frac{2}{3}$
- D**  $\frac{2}{5}$
- E**  $\frac{3}{4}$

**Turn Over**

33) If  $d > j$ , how much greater is the sum of  $d$  and  $f$  than the sum of  $j$  and  $f$ ?

- A  $j - d$
- B  $f + j - d$
- C  $df - dj$
- D  $d - j$
- E  $2d - 2f$

34) Walter wants to catch a train to Windsor scheduled to depart from London at 13:22. The train departs 39 minutes after its scheduled departure time. Walter's watch is 7 minutes slow. What time does Walter's watch show 2 minutes after the train departs?

ANSWER: \_\_\_\_\_

35) A University wishes to invite 1200 students to an event. Of the 800 students invited so far, 60% are male and 40% are female. If the University requires an equal number of invites to be sent to males and females, how many of the remaining invites should be sent to males?

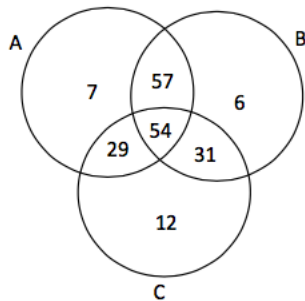
ANSWER: \_\_\_\_\_

36) A restaurant has 21 tables that can seat a total of 94 people. Some of the tables seat 4 people and the others seat 5 people. How many tables seat 5 people?

- A 6
- B 7
- C 8
- D 9
- E 10

**Turn Over**

37)



What is the total of the numbers common to sets A and C in the diagram above?

- A 7
- B 54
- C 12
- D 29
- E 83

38) If the mean of  $3b$ ,  $4b$  and  $5b$  is 12, what is the value of  $b$ ?

- A 3
- B 4
- C 1
- D 8
- E 12

39) In an election, 1.4 million votes were cast. Each vote was either for Mr Jones or Mr Top. Mr Top received 14,000 more votes than Mr Jones. How many votes did Mr Jones receive?

- A 714,000
- B 693,000
- C 707,000
- D 686,000
- E 700,000

**Turn Over**

- 40) How much greater is 3.567 rounded to the nearest whole number than 3.567 rounded to the nearest tenth?

ANSWER: \_\_\_\_\_

- 41) Each term in a sequence is greater than the previous term. The difference between any two consecutive terms in the sequence is always the same number. If the 3rd term in the sequence is 23 and the 7th term is 75, what is the first term in the sequence?

ANSWER: \_\_\_\_\_

- 42) James pulls a marble out of a bag at random. If there are 12 yellow marbles in the bag and the chance that James pulls out a yellow marble is  $\frac{2}{5}$ , how many marbles are there in the bag?

ANSWER: \_\_\_\_\_

- 43) In the month of September, for every 1 day it rained, there were 4 days when it did not rain. How much greater was the the number of days that it did not rain than the number of days that it did rain in September?

ANSWER: \_\_\_\_\_

**Turn Over**

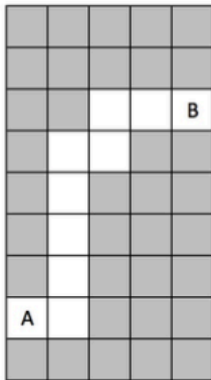
- 44)  $T + R = D$   
 $T \div R = 2$   
 $D \times 3 = 27$

T, R and D each represent a different whole number.

What is  $D \times T \times R$ ?

ANSWER: \_\_\_\_\_

- 45) If I start on square A facing East, which set of instructions will ensure that I follow the white path and arrive on square B?



**NORTH**



- A** FORWARD 2 SQUARES, TURN LEFT 90°, FORWARD 4 SQUARES, TURN RIGHT 90°, FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 1 SQUARE, TURN RIGHT 90°, FORWARD 3 SQUARES.
- B** FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 3 SQUARES, TURN RIGHT 90°, FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 2 SQUARES, TURN RIGHT 90°, FORWARD 3 SQUARES.
- C** FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 4 SQUARES, TURN LEFT 90°, FORWARD 2 SQUARES, TURN LEFT 90°, FORWARD 1 SQUARE, TURN RIGHT 90°, FORWARD 3 SQUARES.
- D** FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 4 SQUARES, TURN RIGHT 90°, FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 1 SQUARE, TURN RIGHT 90°, FORWARD 2 SQUARES.
- E** FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 4 SQUARES, TURN RIGHT 90°, FORWARD 1 SQUARE, TURN LEFT 90°, FORWARD 2 SQUARES, TURN RIGHT 90°, FORWARD 2 SQUARES.

**Turn Over**

- 46) In this parallelogram, angle  $x$  is  $20^\circ$  less than angle  $y$ .



What is  $y^\circ + y^\circ$ ?

ANSWER: \_\_\_\_\_

- 47) Linda buys a book for 20% off the original price. If the original price of the book was £11, how much did Linda save?

ANSWER: \_\_\_\_\_

- 48)  $4x + 6 = 9 - 2x$   
What does  $x$  equal?

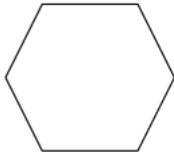
- A** 2
- B**  $\frac{1}{2}$
- C**  $\frac{1}{4}$
- D** 4
- E** 1

**Turn Over**

- 49) Adult flight tickets to Spain cost £245. Child tickets are 10% less. How much does it cost for 2 adults and 3 children to fly to Spain?

ANSWER: \_\_\_\_\_

- 50) This regular hexagon is made out of 6 equilateral triangles. Each triangle has a base of  $x$  cm and a height of  $y$  cm.  
If  $xy = 24$ , what is the area of the hexagon?



ANSWER: \_\_\_\_\_

**NOW GO BACK AND CHECK ALL YOUR ANSWERS**