



16 Plus Examination

Paper 2

Maths

Total marks: [52]

Time allowed: [60]

Information for candidates

- You have 60 minutes.
- There are 52 marks available.
- Calculators are allowed.
- You must show your working.

Full name _____

1. Name these sequences using the following types: Linear, quadratic, geometric and write the next term for each. (6 marks)

a. 3, 8, 13, 18, 23

b. 4, 16, 64, 256

c. 25, 27, 30, 34, 39

2. Here are the first five terms of another sequence.

1, 3, 6, 10, 15

a. Write down the next two terms of this sequence. (2 marks)

b. Explain how you found the answer. (1 mark)

c. Is 55 a term in this sequence? (1 mark)

3. Circle the decimal which is equivalent to $\frac{6}{30}$ (1 mark)

0.8 0.2 0.89 0.15 0.1

4. What is 7 divided by 9 to two decimal places? (2 marks)

5. What is the formula for the volume of a cuboid? (1 mark)

6. Factorise the following expressions (2 marks each)

a. $x^2 + 3x - 10$

b. $a^2 - 5a - 24$

c. $2x^2 + 4x - 6$

7. In a rectangle, the numerical value of the area is greater than the numerical value of the perimeter.

The width of the rectangle is $(y - 5)$ cm.

The height of the rectangle is 8cm

Write an inequality and use it to find the possible values of y , rounding to the nearest whole number. (4 marks)

8. Using the formula for the area of a trapezium ($A = \frac{1}{2}(a + b)h$) where a and b are the parallel sides and h is the height)

a) Find the area of a trapezium where $a = 25$ cm, $b = 23$ cm and $h = 24$ cm

b) Find the height (h) when the area of the trapezium is 750cm^2 and the parallel sides measure 16cm and 34cm.

c) Find the length of side b where the area of the trapezium is 650cm^2 , the height is 26cm and side a is 30cm.

Total for Question 8 = 6 marks

9. a.



This is a regular polygon. Find the size of one of its interior angles. (2 marks)

b. An irregular heptagon has angles of 92° , 85° , 127° , 101° , 115° , 111° and 169° . Find the size of the final angle. (2 marks)

10. In the set U (all quadrilaterals), X = rhombuses and Y = rectangles

a. Which quadrilaterals are in the set $X \cap Y$? (1 mark)

b. Name another two types of quadrilateral which is in the set $X \cup Y$. (2 marks)

11. Calculate these percentage changes

a. Increase £320 by 17%

b. Decrease £2.56 by 8% (to two decimal places)

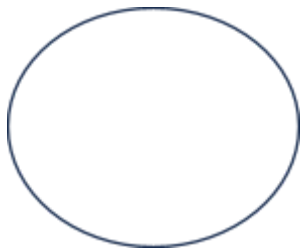
c. Decrease 86kg by 95%

12. a. What is 6500mm^2 in cm^2 ?

b. What is 0.5m^2 in cm^2 ?

c. What is 300cm^2 in mm^2 ?

13. The area of a circle is 16cm^2 . Find the radius of the circle to two decimal places. (3 marks)



14. Ed invests £3000 in a savings account. The building society adds 5% compound interest annually. Ed does not take any money out of the account for ten years, nor does he add any in.

How much is in the account after ten years (to two decimal places)? (3 marks)

15. A bag of chocolates contains 4 raspberry creams, 3 mint creams, 3 orange creams and 2 violet creams. What is the probability that a chocolate chosen as random is:

- a. a violet cream b. a lemon cream c. a chocolate



ANSWERS

1. a. Linear - 28 b. Geometric - 1024 c. Quadratic - 45

2. a. 21, 28 b. Triangular sequence c. Yes

3. 0.2

4. 0.78

5. length x width x height

6a. $(x + 5)(x - 2)$ b. $(a - 8)(a + 3)$ c. $2(x + 3)(x - 1)$

7. $y > 8$

8. a. 576cm^2 b. 15cm c. 20cm

9. a. 135° b. 100°

10. a. squares b. kite, parallelogram.

11. a. £374.40 b. £2.36 c. 4.3kg

12. 65cm^2 b. 5000cm^2 c. 30000mm^2

13. 2.26cm

14. £4886.68

15. a. $1/6$ b. 0 c. 1