Owl Tutors

16 Plus

Paper [4]

Maths

Total marks: [52]

Time allowed: 60 minutes

Information for candidates

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

Full name _____

Questions

1. A window at the top of my bathroom door is a semicircle. It has a diameter of 65cm.

   a. What is the area of the window?

   b. What is the perimeter of the window?

Express your answers using π. (5 marks in total)

2. An isosceles triangle has a perimeter of 30cm.

The base is x cm. The two sides are $(2x – 1)$cm and ycm.

Find the lengths of each of the three sides. (4 marks)

3. Martha draws a graph. The equation of her line is $y = 4x – 6$.

a. What is the gradient of the line? (1 mark)

b. What are the co-ordinates of the y intercept of the line? (1 mark)

4. A cube has volume 216cm^3. Calculate its surface area. (3 marks)

5. Convert these standard form expressions to ordinary numbers: (2 marks each)

a. 6.34×10^6

b. 7.85×10^{-5}

6. Mike bought a small flat for £163,000.

He made 9% profit when he sold the flat.

He used all of his money he had from the flat to pay 40% of the deposit on a house. The deposit was one sixth of the price of the house.

Work out the price of the house. (5 marks)

7. Convert 200cm^2 into mm^2. (2 marks)

8. Horntail village had 9 days of rain in May this year. Estimate the probability that it will have rain on some days in May next year. Express your answer as a percentage to the nearest whole number. (3 marks)

9. Arran has some cuboids. He tries to complete this table but has left some spaces. Can you complete it for him? (8 marks)

Length of cuboid	Width of cuboid	Height of cuboid	Volume of cuboid
16cm	19cm	4cm	
4cm	10cm		360cm^3
80cm		6cm	480cm^3
	2cm	8cm	384cm^3

10. Henry is 17. He wants to learn to drive but he has to pass his theory test and his practical test. One year later, the results are in. In his year group of 200 students, 60% of students failed their theory test and six twelfths passed their practical test. What is the probability that he passed both tests? Express your answer as a percentage. (4 marks)

11. In a regular polygon, each interior angle is 3 times as big as each exterior angle. What is the name of the polygon? (4 marks)

12. On a street map of Edinburgh the scale is represented as 1: 15,000.

a. How many metres is represented by 10cm? (2 marks)

b. On the map, two statues are shown as being 6.55cm apart. How far apart are they in real life? Give your answer in km correct to two decimal places. (3 marks)

c. Kara walks at 5.5km/h. How long will it take her to walk between the two statues? Use your answer to question b. Give your answer in minutes to the nearest minute. (3 marks)

Answers

1.a. 528.125πcm^2 b. 65 + 32.5πcm
2. 6.4cm, 11.8cm, 11.8cm
3. a. 4   b. (0, -6)
4. 216cm^2
5. a. 6340000 b. 0.0000785
6. £426,408
7. 20,000mm^2
8. 29%
9.

Length of cuboid	Width of cuboid	Height of cuboid	Volume of cuboid
16cm	19cm	4cm	1216cm^3
4cm	10cm	9cm	360cm^3
80cm	1cm	6cm	480cm^3
24cm	2cm	8cm	384cm^3

10. 45%
11. Octagon
12. a. 1500m   b. 0.98km   c. 11 minutes.