

GCSE MATHEMATICS

Name:

Practice Paper Higher 2

Maximum marks: 80

Calculator

Time allowed: 1 hour 30 minutes

These questions are from past papers covering topics and skills based on the advance information to help you prepare for the exams this summer.

Answer all questions in the spaces provided.

1 Circle the decimal that is closest in value to $\frac{39}{800}$

0.04

0.048

0.049

0.05

(Total 1 mark)

2 (a) Circle the number that is a power of 3.

25

27

31

32

44

45

(1)

(b) Circle the prime number.

25

27

31

32

44

45

(1)

(c) Circle a number that is a factor of 900

25

27

31

32

44

45

(1)

(Total 3 marks)

3 (a) Factorise $x^2 - x$

Answer _____

(1)

(b) Multiply out and simplify $5x(x - 3) - 8x$

Answer _____

(3)

(Total 4 marks)

4 Abby and Judy share some money.

Abby gets 25%

(a) Write Abby's share : Judy's share as a ratio.

Give your answer in its simplest form.

Answer _____ : _____

(2)

(b) Judy gets £19.50

How much does Abby get?

Answer £ _____

(2)

(Total 4 marks)

5 A biased coin is thrown 250 times.

The relative frequency of Heads is worked out after every 50 throws.

Total number of throws	50	100	150	200	250
Relative frequency	0.4	0.29	0.4	0.32	0.3

Circle the best estimate of the probability of Heads.

0.3

0.32

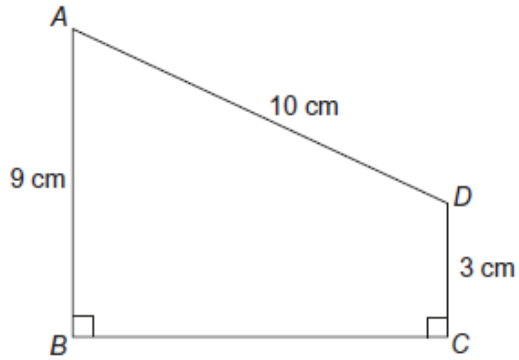
0.342

0.4

(Total 1 mark)

6 $ABCD$ is a trapezium.

Not drawn accurately



Work out the length of BC .

You **must** show your working.

Answer _____ cm

(Total 4 marks)

7 The table shows the scores of 20 students in a test.

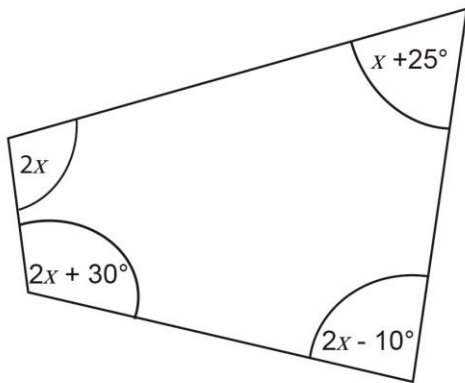
Score	Frequency
7	6
8	9
9	4
10	1
Total	20

Work out the mean score.

Answer _____

(Total 3 marks)

- 8 The diagram shows a quadrilateral.



Not drawn accurately

Work out the value of x .

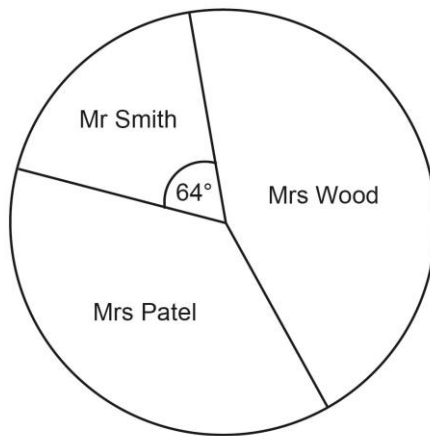
Answer $x =$ _____ degrees

(Total 4 marks)

- 9 The pie chart shows some information about the share of votes for candidates in an election.

Election Results

Not drawn accurately



The angle for Mrs Wood would be 24° more than the angle for Mrs Patel.

There were 5220 votes in total.

Work out the number of votes for Mrs Patel.

Answer _____

(Total 4 marks)

- 10 $1000 \text{ cm}^3 = 1 \text{ litre}$

A tank contains $45\,000 \text{ cm}^3$ of water.

The tank leaks at $0.75 \text{ litres/minute}$.

How long does the tank take to empty?

Answer _____

(Total 4 marks)

11 The first four triangular numbers are 1, 3, 6, 10

Write down the next triangular number.

Answer _____

(Total 1 mark)

12 (a) Circle the value of the reciprocal of 0.2

$\frac{2}{10}$

$\frac{1}{2}$

$\frac{1}{20}$

0.8

5

(1)

(b) Write down the value of 8.5^0

Answer _____

(1)

(Total 2 marks)

13 Work out the value of $81^{-\frac{1}{4}}$

Answer _____

(Total 2 marks)

14 2476 adults watch a cricket match.

The ratio men : women is 3 : 1

How many **more** men than women watch the match?

Answer _____

(Total 3 marks)

15 In this question use

1 pound = 0.4536 kilograms

1 inch = 2.54 centimetres.

The pressure of a basketball is 7.5 pounds per square inch.

Work out this pressure in grams per square centimetre.

Answer _____ g/cm²

(Total 4 marks)

16 x and y are integers such that

$$-5 < x \leq 3 \quad \text{and} \quad 2 \leq y \leq 7$$

Work out the **largest** possible value of $x^2 + y^2$

Answer _____

(Total 2 marks)

17 The speed of 50 vehicles was measured travelling along a road.

Speed, s (mph)	Number of cars
$0 < s \leq 40$	2
$40 < s \leq 60$	11
$60 < s \leq 75$	24
$75 < s \leq 90$	9
$90 < s$	4

- (a) Every driver travelling at more than 70 mph is fined £60
On average, 8400 drivers use the road each day.

Estimate the total amount of money raised from fines on the road each day.

Answer £ _____

(3)

- (b) Mia says,

“4% of vehicles on the road travel at 40 mph or less.”

Explain why she might be wrong.

(1)

(Total 4 marks)

18 Here is a formula $F = \frac{X}{Y}$

X **increases** by 25%.

Y **decreases** by 20%.

Work out the percentage increase in F .

Answer _____ %

(Total 4 marks)

19 (a) Factorise fully $9a^2 - 6a$

Answer _____

(2)

(b) Solve $x^2 - 12x + 20 = 0$

Answer _____

(3)

(Total 5 marks)

- 20 A circle has equation $x^2 + y^2 = 4$
Circle the length of its radius.

2 4 8 16

(Total 1 mark)

- 21 Luke has a rectangular garden.
The length is 40 m
The width is 25 m
Both measurements are given to the nearest metre.

Mira also has a garden.
The area is 970 m² to the nearest 10 m²
Mira thinks her garden has a bigger area.
Is she correct?

Tick a box.

You **must** show your working.

Correct Incorrect Cannot tell

(Total 3 marks)

- 22 You are given that $(x + a)^2 - 7 \equiv x^2 + 10x + b$
Work out the values of a and b .

$a =$ _____

$b =$ _____

(Total 2 marks)

- 23 The equation of a curve is $y = (x + 3)^2 + 5$
Circle the coordinates of the turning point.

(5, 3)

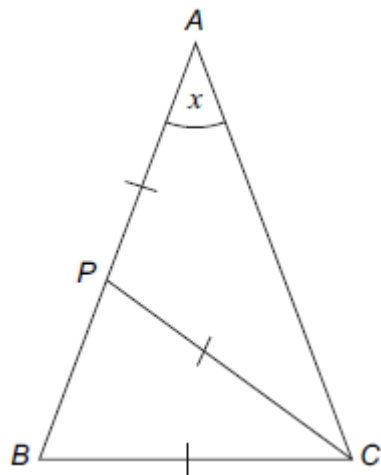
(5, -3)

(3, 5)

(-3, 5)

(Total 1 mark)

- 24 ABC is a triangle.
 P is a point on AB such that $AP = PC = BC$
Angle $BAC = x$



Not drawn accurately

- (a) Prove that angle $ABC = 2x$

(3)

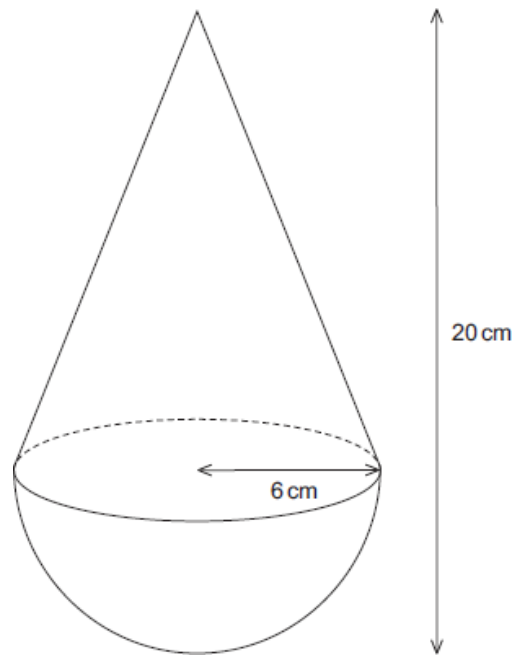
- (b) You are also given that $AB = AC$
Work out the value of x .

x _____ degrees

(3)

(Total 6 marks)

- 25** A small toy is made by joining a solid cone and a solid hemisphere together.
The cone and hemisphere each have radius 6 cm.



- (a) Show that the volume of the toy is $312\pi \text{ cm}^3$.

(4)

- (b) A larger version of the toy is made that has
- dimensions twice the size of the small toy
 - mass 1.5 kilograms.

The toy is made from foam.

Work out the density of the foam. Give your answer in grams per cubic centimetre.

Answer _____ g per cm^3

(4)

(Total 8 marks)