cookie

Practice paper

GCSE Maths Higher, practice paper 3 (calculator) (AQA style)

In the style of AQA GCSE Mathematics (8300) Paper 3 Higher

Practice paper written by cookie in the style of AQA GCSE Mathematics (8300) Paper 3 Higher. Not an AQA paper; not affiliated with or endorsed by AQA.

Time allowed: 1 hour 30 minutes

Total marks: 80

You may use a calculator.

Name _____

Instructions

- Answer all questions.
- Answer the questions in the spaces provided.
- You may use a calculator.
- In all calculations, show clearly how you work out your answer.
- The marks for each question are shown in brackets.
- The maximum mark for this paper is 80.
- Diagrams are not used in this paper; where a shape is needed it is described in words.

Information

- The marks for each question are shown in brackets.
- The maximum mark for this paper is 80.

Do it online, timed and marked:
cookie.education/past-papers/gcse/cookie/maths-aqa-style

Answer all questions in the spaces provided.

0 1 What is 0.06072 correct to 2 significant figures?
Circle your answer.

A 0.06 B 0.060 C 0.061 D 0.0607

[1 mark]

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0 2 Here are the first four terms of an arithmetic sequence.
7 11 15 19
Which expression is the nth term of the sequence?
Circle your answer.

A n + 4 B 4n + 3 C 4n + 7 D 3n + 4

[1 mark]

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0 3 Which of these is the equation of a circle?
Circle your answer.

A $y = x^2 + 9$ B $x^2 + y^2 = 9$ C $y = 9/x$ D $y = 9 - x$

[1 mark]

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0 4 What is the value of $5^0 + 5^{-1}$?
Circle your answer.

A 0.2 B 1.2 C 5.2 D 6

[1 mark]

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0 5 . 1 Write 1260 as a product of its prime factors.
Give your answer in index form.

[2 marks]

Answer .....

0 5 . 2 $600 = 2^3 \times 3 \times 5^2$

Work out the lowest common multiple (LCM) of 1260 and 600.

[2 marks]

Answer .....

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0 6 A shop sells kitchen rolls in three pack sizes.

Pack	Number of rolls	Price
Small	6	£4.50
Medium	9	£6.40
Large	15	£11.20

Which pack is the best value for money?
You must show your working.

[3 marks]

Answer .....

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0 7 . 1 The mass of a parcel is m grams.
m = 250, correct to the nearest 10 grams.
Write down the error interval for m.

[2 marks]

Answer .....

0 7 . 2 A time, t seconds, is 7.4 when truncated to 1 decimal place.
Write down the error interval for t.

[1 mark]

Answer .....

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0 8 A shop buys 40 jackets for a total of £1150.
It sells 32 of the jackets for £45 each.
It sells the other 8 jackets in a sale for £30 each.
Work out the percentage profit the shop makes.
Give your answer correct to 1 decimal place.

[4 marks]

Answer .....

0 9 Concrete is made by mixing cement, sand and gravel in the ratio 1 : 2.5 : 4 by mass.
A builder has
60 kg of cement
140 kg of sand
230 kg of gravel.
Work out the greatest mass of concrete the builder can make.

[4 marks]

Answer .....

10 The interior angle of a regular polygon is 7 times its exterior angle.
Work out the number of sides of the polygon.

[3 marks]

Answer .....

11 The table shows the number of goals scored by a football team in each of 40 matches.

Number of goals	Frequency
0	7
1	12
2	10
3	6
4	5

1 1 . 1 Work out the mean number of goals per match.

[3 marks]

Answer .....

1 1 . 2 Work out the median number of goals.

[1 mark]

Answer .....

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12 A train travels 186 km in 1 hour 50 minutes.
Work out the average speed of the train in metres per second.
Give your answer correct to 1 decimal place.

[3 marks]

Answer .....

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13 Dan invests £2000 at r% compound interest per year.
At the end of 4 years the investment is worth £2251.02, to the nearest penny.
Work out the value of r.

[3 marks]

Answer .....

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14 A is the point (−2, 7).
B is the point (4, −5).

14.1 Work out the equation of the straight line through A and B.
Give your answer in the form y = mx + c

[3 marks]

Answer .....

14.2 The line L is perpendicular to AB and passes through the midpoint of AB.
Work out the equation of L.

[3 marks]

Answer .....

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15 Here are the first five terms of a quadratic sequence.
4 9 18 31 48
Work out an expression for the nth term of the sequence.

[3 marks]

Answer .....

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16 The point P has coordinates (3, −2).
P is rotated 90° clockwise about the origin.
The image is then translated by the vector with 4 to the right and 1 up, written as the column vector (4, 1).
Work out the coordinates of the final image of P.

[2 marks]

Answer .....

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17 A, B, C and D are points on a circle with centre O.
ABCD is a quadrilateral.
Angle ABC = (2x + 10)°
Angle ADC = (3x − 5)°

17.1 Work out the value of x.
Give a reason for each stage of your working.

[3 marks]

Answer .....

17.2 Work out the size of the angle AOC that is not reflex.
Give a reason for your answer.

[2 marks]

Answer .....

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18 A solid cone has a base radius of 9 cm and a perpendicular height of 24 cm.
A smaller cone is cut off the top of it, by a cut parallel to the base, leaving a frustum.
The smaller cone has a perpendicular height of 8 cm.
Volume of a cone = $1/3 \times \pi \times r^2 \times h$, where r is the base radius and h is the perpendicular height.
Work out the volume of the frustum.
Give your answer correct to 3 significant figures.

[4 marks]

Answer .....

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19 On any school day, the probability that Lewis's bus is late is 0.2
If the bus is late, the probability that Lewis is late for school is 0.7
If the bus is not late, the probability that Lewis is late for school is 0.05

19.1 Work out the probability that, on a school day chosen at random, Lewis is late for school.

[3 marks]

Answer .....

1 9 . 2 On one school day, Lewis is late for school.
Work out the probability that his bus was late on that day.

[2 marks]

Answer .....

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20 A cuboid is 8 cm long, 6 cm wide and 5 cm tall.
A straight line joins a corner on the bottom face of the cuboid to the opposite corner on the top face, passing through the inside of the cuboid.
Work out the angle between this line and the bottom face of the cuboid.
Give your answer correct to 1 decimal place.

[3 marks]

Answer .....

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21 Solve $\sin x = 0.4$ for $0° \leq x \leq 360°$
Give your answers correct to 1 decimal place.

[3 marks]

Answer .....

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22 The curve $y = ab^x$ passes through the points (2, 45) and (5, 151.875).
a and b are positive constants.
Work out the values of a and b.

[4 marks]

Answer .....

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23 The point P(2, 5) lies on the curve y = f(x).

23.1 Write down the coordinates of the point that P moves to on the curve y = f(x) − 3

[1 mark]

Answer .....

23.2 Write down the coordinates of the point that P moves to on the curve y = f(−x)

[1 mark]

Answer .....

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24 Prove that the sum of the squares of any three consecutive integers is never a multiple of 3

[3 marks]

Answer .....

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25 In triangle PQR
PQ = 12 cm
PR = 9 cm
The area of the triangle is 40 cm^2.
Angle QPR is obtuse.
Work out the length of QR.
Give your answer correct to 3 significant figures.

[5 marks]

Answer .....

END OF QUESTIONS