cookie

Practice paper

GCSE Maths Higher, practice paper 1 (non-calculator) (Edexcel style)

In the style of Pearson Edexcel GCSE Mathematics (1MA1) Paper 1 Higher

Practice paper written by cookie in the style of Pearson Edexcel GCSE Mathematics (1MA1) Paper 1 Higher. Not a Pearson Edexcel paper; not affiliated with or endorsed by Pearson Edexcel.

Time allowed: 1 hour 30 minutes

Total marks: 80

You must not use a calculator.

Name _____

Instructions

- Answer all questions.
- Answer the questions in the spaces provided; there may be more space than you need.
- Calculators may not be used.
- You must show all your working.
- The total mark for this paper is 80.
- The marks for each question are shown in brackets.
- There are no diagrams in this paper; shapes are described in words.

Information

- The marks for each question are shown in brackets at the end of each part.
- The maximum mark for this paper is 80.

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

Answer ALL questions. Write your answers in the spaces provided.

1 **(a)** Write 180 as a product of its prime factors.
Give your answer in index form.

Answer .....

(2)

(b) $84 = 2^2 \times 3 \times 7$
Find

(i) the highest common factor (HCF) of 180 and 84
(ii) the lowest common multiple (LCM) of 180 and 84

Answer .....

(2)

(Total for Question 1 is 4 marks)

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2 Jo spends 2/5 of her money on rent.
She spends 1/4 of the money she has left on food.
She then has £360 left.
How much money did Jo have at the start?

Answer .....

(4)

(Total for Question 2 is 4 marks)

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3 Work out an estimate for the value of
$(19.6 \times 4.87) \div 0.48$

Answer .....

(3)

(Total for Question 3 is 3 marks)

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4 Solve $(3x - 2)/4 - (x + 1)/3 = 2$

Answer .....

(3)

(Total for Question 4 is 3 marks)

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5 Metal A has a density of 8 g/cm^3.
Metal B has a density of 3 g/cm^3.
150 cm^3 of metal A and 250 cm^3 of metal B are mixed to make an alloy.
Work out the density of the alloy.

Answer .....

(3)

(Total for Question 5 is 3 marks)

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6 The size of each interior angle of a regular polygon is 7 times the size of each exterior angle.
Work out the number of sides the polygon has.

Answer .....

(3)

(Total for Question 6 is 3 marks)

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7 (a) Here are the first four terms of an arithmetic sequence.
7 11 15 19
Find an expression, in terms of n, for the nth term of this sequence.

Answer .....

(2)

(b) Is 101 a term of this sequence? You must give a reason for your answer.

Answer .....

(1)

(c) Here are the first five terms of a quadratic sequence.
4 9 18 31 48
Find an expression, in terms of n, for the nth term of this sequence.

Answer .....

(3)

(Total for Question 7 is 6 marks)

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8 There are 60 students in a year group.
35 of the students study French.
28 of the students study Spanish.
9 of the students study neither French nor Spanish.

(a) How many students study both French and Spanish?

Answer .....

(2)

(b) One of the students who study French is chosen at random.
Find the probability that this student also studies Spanish.

Answer .....

(2)

(Total for Question 8 is 4 marks)

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9 A car was bought for £12 000.
The value of the car depreciates by 10% each year.
Work out the value of the car at the end of 2 years.

Answer .....

(3)

(Total for Question 9 is 3 marks)

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10 (a) The line L passes through the points (−1, 7) and (3, −1).
Find an equation of L.

Answer .....

(3)

(b) The line M is perpendicular to L and passes through the point (4, 1).
Find an equation of M.

Answer .....

(3)

(Total for Question 10 is 6 marks)

11

	Least	Lower quartile	Median	Upper quartile	Greatest
Group A	12	18	25	30	41
Group B	10	22	28	31	35

(a) In a test, the mean score of 12 boys was 15 and the mean score of 18 girls was 20.
Work out the mean score of all 30 students.

Answer .....

(2)

(b) The table shows information about the times, in seconds, two groups of people took to solve a puzzle.
Compare the distributions of the times for the two groups.

Answer .....

(2)

(Total for Question 11 is 4 marks)

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12 Two solids, P and Q, are mathematically similar.
The surface area of P is 45 cm^2.
The surface area of Q is 80 cm^2.
The volume of P is 54 cm^3.
Work out the volume of Q.

Answer .....

(3)

(Total for Question 12 is 3 marks)

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13 Make x the subject of the formula
$y = (3x + a)/(x - 2)$

Answer .....

(4)

(Total for Question 13 is 4 marks)

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14 In triangle PQR
PQ = 8 cm
PR = 9 cm
Angle QPR = 150°
Work out the area of triangle PQR.

Answer .....

(2)

(Total for Question 14 is 2 marks)

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15 (a) Expand and simplify $(2 + \sqrt{5})(3 - \sqrt{5})$

Answer .....

(2)

(b) Show that $(\sqrt{5} + 1)/(\sqrt{5} - 1)$ can be written as $(a + \sqrt{5})/b$, where a and b are integers.
Find the values of a and b.

Answer .....

(3)

(Total for Question 15 is 5 marks)

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16 The curve with equation $y = f(x)$ has a maximum point at (2, 5).
Write down the coordinates of the maximum point of the curve with each equation.

(a) $y = f(x - 3)$

Answer .....

(1)

(b) $y = f(x) + 4$

Answer .....

(1)

(c) $y = f(2x)$

Answer .....

(1)

(Total for Question 16 is 3 marks)

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17 Simplify fully $(x^2 - 9)/(2x^2 + 5x - 3)$

Answer .....

(3)

(Total for Question 17 is 3 marks)

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18 Solve algebraically the simultaneous equations

$x^2 + y^2 = 25$

$y = x + 1$

Answer .....

(5)

(Total for Question 18 is 5 marks)

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19 Solve $3/(x + 1) + 1/(x - 1) = 1$

Give your answers in the form $p \pm \sqrt{q}$, where p and q are integers.

Answer .....

(4)

(Total for Question 19 is 4 marks)

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20 A, B and C are points on a circle with centre O.
AB is a diameter of the circle.
Prove that angle ACB = 90°.
You must not use the circle theorem 'the angle in a semicircle is 90°' in your proof.

Answer .....

(4)

(Total for Question 20 is 4 marks)

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21 OABC is a parallelogram.
The vector from O to A is a and the vector from O to C is c.
M is the midpoint of BC.
N is the point on the line AC such that AN : NC = 2 : 1
Prove that O, N and M lie on a straight line.

Answer .....

(4)

(Total for Question 21 is 4 marks)

END OF QUESTIONS