

Year 9 Spring Assessment Mathematics

Name

Date

Time allowed 55 minutes. The maximum mark for this paper is 50.

Instructions

- Use black ink or black ball-point pen
- Calculator allowed
- Draw diagrams in pencil
- Answer all questions
- You must answer the questions in the spaces provided
- Do all rough work in this booklet
- Cross through any work you do not want to be marked
- You must keep working until the end of the 50 minutes

Information

• The results of this assessment will be reported back to parents/carers.



Test Analysis

| Question | | My Mark | Max Mark | Hegarty |
|----------|--|---------|----------|---------|
| 1 | Solving a linear equation | | 1 | 178 |
| 2 | Calculating with fractions | | 1 | 68 |
| 3 | Expanding a single bracket | | 1 | 160 |
| 4 | Using multipliers to increase an amount | | 1 | 89 |
| 5 | Identifying the gradient of a straight line given the equation | | 1 | 212 |
| 6 | Expanding a single bracket | | 2 | 160 |
| 7 | Drawing a graph | | 4 | 205 |
| 8 | Factorising an expression | | 2 | 168 |
| 9 | Evaluating powers and roots | | 2 | 101 |
| 10 | Expanding and simplifying a pair of double brackets | | 2 | 162 |
| 11 | Working out the equation of a line given the graph | | 4 | 208 |
| 12 | Factorising a quadratic expression | | 2 | 223 |
| 13 | Understanding squares | | 2 | 162 |
| 14 | Understanding coordinates and straight lines | | 2 | - |
| 15 | Sharing given a ratio | | 3 | 332 |
| 16 | Adding algebraic fractions | | 2 | 172 |
| 17 | Understanding different forms of algebra | | 3 | 154 |
| 18 | Solving a problem involving algebraic area and perimeter | | 3 | 552 |
| 19 | Dividing algebraic fractions | | 3 | 172 |
| 20 | Area of a Circle Problem | | 3 | 543 |
| 21 | Ratio and a line segment | | 4 | - |
| 22 | Factorising Quadratic Expressions where a>1 | | 2 | 228 |

1 Solve 12x = 3

Circle your answer.

| | x = -9 | <i>x</i> = 0.25 | x = 4 | <i>x</i> = 36 | [1] | |
|---|--|-------------------------|----------------------|----------------|-----|--|
| 2 | Work out $\frac{3}{7} \times 2$ Circle your answer. | | | | | |
| | $\frac{6}{14}$ | <u>6</u> 7 | $\frac{3}{14}$ | <u>9</u> 49 | [1] | |
| 3 | Expand $3(x + 5)$ Circle your answer. 3x + 15 | $3x^2 + 15x$ | 4 <i>x</i> + 15 | 3 <i>x</i> + 5 | [1] | |
| 4 | Circle the calculation that increases 50 by 30% Circle your answer. 50×0.3 50×1.03 50×1.3 50×3 | | | | | |
| 5 | A straight line has e | equation $y = 5x + 1$. | What is the gradient | of the line? | [1] | |

A straight line has equation y = 5x + 1. What is the gradient of the line? Circle your answer.

| 5 | 1 | 6 | -0.2 | |
|---|---|---|------|-----|
| | | | | [1] |

6 Expand 4(3+6y)

| Answer | [2] |
|--------|-----|
| | L_1 |

7a Complete the table for y = 3x + 1

| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
|---|----|----|----|---|---|---|---|
| у | -8 | | -2 | | 4 | | |

b On the grid draw the graph of y = 3x + 1 for values of x from -3 to 3



[2]

Factorise fully 8x + 208

Answer_____[2]

9a Use your calculator to work out $\sqrt[3]{4096}$

Answer_____[1]

Use your calculator to work out 37 b

Answer_____[1]

10 Expand and simplify (x + 10)(x + 4)

Answer_____[2]

11 Here is a line.



11a Work out the gradient of the line.

Answer _____

11b Write down the equation of the line. Give your answer in the form y = mx + c

[2]

[2]

Answer

Answer_____ [2]

13 A pupil wrote:

For all numbers j and k, $(j + k)^2 = j^2 + k^2$

Show that the pupil is wrong.

[2]

14 The graph shows a straight line. The equation of the line is y = 3x.



Does the point (25, 75) lie on the straight line?

Explain how you know.

[2] Answer

| | ork out | $\frac{3a}{2} + \frac{7a}{8}$ | Ans | swer | and | | [2] |
|----|---------|-------------------------------|------------------|------------------|---------|------------|-----|
| | - | | | Ar | nswer | | [2] |
| 17 | Use o | one of these v | vords to describ | e each of the fo | llowing | | [3] |
| | Ex | pression | Equation | Identity | Formula | Inequality | |
| а | 5x + 3 | 3 = 2x - 6 | | | | | |
| b | 6a(2a | a – 7) ≡ 12a² - | - 42a | | | | |
| С | C = 1 | 2n + 36 | | | | | |



20 This shaded shape is made using two semi circles.



Answer

Calculate the **area** of the shaded region to 1 decimal place.

[3]

 cm^2

21 *X* divides the line *P*Q in the ratio 1:3 *P* is (2, 1) and Q is (14, 5)



Work out the coordinates of the point *X*.

Answer_____[4]

22 Factorise fully $3x^2 - 5x - 2$



[END OF QUESTIONS]