Maths Year 8 — Practice Exam 1 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. Answer: $85
Starting at −35 and adding 120: −35 + 120 = 85, so her balance is $85.

2. A. x ≥ 3
The line is shaded from 3 to the right, so x is 3 or more. The filled circle means 3 itself is included, so it is x ≥ 3. An open circle would mean x > 3.

3. D. (2, −2)
Right 6: −4 + 6 = 2. Down 3: 1 − 3 = −2. The image is (2, −2).

4. B. It is a leading question.
The wording pushes people towards agreeing, so it is a leading question and the results would be biased.

5. D. 6x + 15
Multiply each term inside the brackets by 3: 3 × 2x is 6x and 3 × 5 = 15, giving 6x + 15. 6x + 5 forgets to multiply the 5.

6. Answer: 9
Add 7 to both sides to get 4m = 36, then divide both sides by 4 to get m = 9. Check: 4 × 9 − 7 = 29.

7. C. 8
Each coin has 2 outcomes, so there are 2 × 2 × 2 = 8: HHH, HHT, HTH, THH, HTT, THT, TTH, TTT.

8. D. $30
There are 3 + 5 = 8 equal parts, so each part is $48 ÷ 8 = $6. Lily has 5 parts, which is $30. $18 is what Tom gets.

9. D. 3/8, 0.4, 0.45, 1/2
Write each as a decimal: 3/8 = 0.375 and 1/2 = 0.5. In order: 0.375, 0.4, 0.45, 0.5.

10. D. $51
10% of $60 is $6 and 5% is $3, so the discount is $9. The sale price is $60 − $9 = $51. $9 is the discount, not the price.

11. Answer: 50
Area = ½ × (sum of parallel sides) × height = ½ × (12 + 8) × 5 = 50 cm².

12. Answer: 29
The lowest score is 35 and the highest is 64, so the range is 64 − 35 = 29.

13. Answer: 41
The designs have 5, 9 and 13 tiles, so Design n has 4n + 1 tiles. Design 10 has 4 × 10 + 1 = 41.

14. C. 32 000
1 m² = 10 000 cm², so 3.2 m² = 3.2 × 10 000 = 32 000 cm².

15. A. A reflection in the y-axis
Every point of A keeps its y-coordinate and has its x-coordinate change sign: (1, 1) goes to (−1, 1) and (4, 1) goes to (−4, 1). That is a reflection in the y-axis. A translation 5 units left would send (1, 1) to (−4, 1) and leave the triangle facing the same way.

16. A. 4/11
MATHEMATICS has 11 letters, and 4 of them are vowels: A, E, A and I. 3/11 counts the A only once.

17. A. t = 3n + 2
The designs have 5, 8 and 11 tiles, going up by 3 each time, so the rule starts with 3n. For Design 1, 3 × 1 = 3 and 2 more makes 5, so t = 3n + 2. The rule t = 5n works for Design 1 only.

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18. C. 10

Count each column: the back row has 3, 2 and 1 cubes and the front row has 2, 1 and 1. 3 + 2 + 1 + 2 + 1 + 1 = 10. Some cubes at the back are hidden, but they must be there to hold up the cubes on top.

19. B. $y = 2x + 1$

Each time x goes up by 1, y goes up by 2, and when x is 0, y is 1. So the rule is $y = 2x + 1$. Check the point (3, 7): $2 \times 3 + 1 = 7$.

20. Answer: -8

$p^2 = (-2)^2 = 4$ and $3q = 12$, so $p^2 - 3q = 4 - 12 = -8$.

21. B. 30 cm²

The area of a rhombus is half the product of its diagonals: ½ × 10 × 6 = 30 cm². 60 cm² forgets the half.

22. C. $6x + 6$

The perimeter is two lengths plus two widths: $2(2x + 3) + 2x = 4x + 6 + 2x = 6x + 6$. $2x^2 + 3x$ is the area, not the perimeter.

23. A. 3/8

2 hours is 120 minutes, and 45/120 = 3/8.

24. Answer: 120

The cross-section area is ½ × 6 × 4 = 12 cm², and volume = area × length = 12 × 10 = 120 cm³.

25. Answer: 26

5a is 20 and 2b is −6. Subtracting a negative is the same as adding, so 20 + 6 = 26.

26. C.

−1.5 is halfway between −2 and −1, 1/4 is a quarter of the way from 0 to 1, and 1.75 is three quarters of the way from 1 to 2. Only number line C has all three in the right place.

27. Answer: 17

The four numbers add to 48. Five numbers with mean 13 add to 65, so the fifth number is 65 − 48 = 17.

28. Answer: 40

The marked angles are alternate angles between parallel lines, so they are equal: $2x + 20 = 100$, $2x = 80$, $x = 40$.

29. A. The mean increases by more than the median does.

Before: the ages add to 190, so the mean is 38, and the median is 38. After: the ages add to 280, so the mean is about 46.7, and the median is halfway between 38 and 41, which is 39.5. An extreme value pulls the mean far more than the median. The mode stays 41.

30. Answer: 80 cm

The diagonal is the hypotenuse of a right-angled triangle with sides of 48 cm and 64 cm. 48 × 48 is 2304 and 64 × 64 is 4096, and 2304 + 4096 = 6400. The square root of 6400 is 80, so the diagonal is 80 cm.

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PREVIEW

That’s the end of the preview answers

These are the answers to the 30 preview questions. The full answer key covers all 60 questions in Maths Year 8 — Practice Exam 1, with the working behind every mark.

STILL TO COME	QUESTIONS	MARKS
Numeracy — calculator	30	30

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