Maths Year 8 — Practice Exam 4 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. Answer: 8 glasses
2 litres is 2000 mL, and 2000 ÷ 250 = 8, so 8 glasses can be filled.

2. C. 12ab
Multiply the numbers and write the pronumerals together: 4 × 3 = 12, so 4a × 3b = 12ab.

3. A. $x \geq 3$
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 $x \geq 3$. An open circle would mean $x > 3$.

4. C. 25
35 students walk and 10 ride a bike, so 35 − 10 = 25 more students walk.

5. Answer: 40
a + b = 16, half of 16 is 8, and 8 × 5 = 40.

6. C. 200
Round to 22 × 5 ÷ 0.5 = 110 ÷ 0.5 = 220, which is closest to 200. Dividing by about a half doubles the number.

7. Answer: $60
There are 7 equal parts, so each part is $84 ÷ 7 = $12. Sam gets 5 parts: $60.

8. Answer: 66 m²
The area of a trapezium is half the sum of the parallel sides times the height. Half of (8 + 14) is 11, and 11 × 6 = 66, so the area is 66 m².

9. B. Asking a random sample of residents from across the whole council area
A random sample from the whole area gives every resident a chance of being asked. The other surveys mostly reach people who already have a particular view, such as skaters or council workers.

10. A. Year 10
The differences are 5 (Year 7), 8 (Year 8), 3 (Year 9) and 9 (Year 10). Year 10 has the greatest difference.

11. A. $x > 4$
Subtract 1: $2x > 8$. Divide by 2: $x > 4$.

12. B. $y = 3x + 4$
y goes up by 3 each time x goes up by 1, so the rule starts with 3x. When x = 1, 3 × 1 = 3 and y is 7, so add 4: $y = 3x + 4$. The rule $y = x + 6$ only works when x is 1.

13. A. all three pairs of sides are equal
Three pairs of equal sides (SSS) fixes the triangle exactly. Equal angles alone only show the triangles are the same shape, not the same size.

14. A. 36°
The base angles are equal, so both are 72°. x = 180° − 72° − 72° = 36°.

15. B. 31.4 cm
Circumference = π × diameter ≈ 3.14 × 10 = 31.4 cm. 62.8 cm uses the diameter as if it were the radius.

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

17. A. 4 h 35 min
From 22:40 to midnight is 1 h 20 min, and from midnight to 03:15 is 3 h 15 min. Together: 4 h 35 min.

18. Answer: 41

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

19. Answer: 54

Each of the 6 faces is 3 × 3 = 9 cm², so the surface area is 6 × 9 = 54 cm².

20. 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.

21. C. 7

Divide both sides by 3: x − 2 = 5, so x = 7. 17 expands the bracket wrongly as 3x − 2.

22. Answer: 29

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

23. 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.

24. Answer: 375 g

Each muffin needs 150 ÷ 6 = 25 g of butter, so 15 muffins need 15 × 25 = 375 g.

25. Answer: 3

With 10 values, the median is the mean of the 5th and 6th values in order, which are both 3.

26. A. 20%

The discount is $50, and 50/250 = 1/5 = 20%. 25% divides by the new price instead of the original.

27. 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 × 3 + 1 = 7.

28. B. 25.7 cm

The curved edge is half the circumference: ½ × 3.14 × 10 = 15.7 cm. Adding the 10 cm diameter gives 25.7 cm.

29. A. 3/16

15 of the 80 students are in Year 8 and walk, and 15/80 = 3/16. The answer 3/8 is 15/40, the probability for a student already known to be in Year 8.

30. Answer: 31

Any non-zero number to the power 0 is 1, so 5^0 is 1. Then 5^1 is 5 and 5^2 is 25. The total is 1 + 5 + 25 = 31.

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PREVIEW

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