Maths Year 8 — Practice Exam 2 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. D. 2 h 7 min

From 14:48 to 15:48 is 1 hour, and from 15:48 to 16:55 is another 1 hour 7 minutes, so the trip takes 2 hours 7 minutes. 1 h 53 min comes from subtracting the minutes the wrong way round.

2. C. 1000

1 cm³ holds 1 mL, and 1 L = 1000 mL, so 1 L = 1000 cm³.

3. D. 9

Students who play soccer but not basketball are inside the soccer circle but outside the overlap: 9. The answer 13 also counts the 4 who play both.

4. A. $6x - 8$

Multiply each term in the brackets by 2: $2 \times 3x = 6x$ and $2 \times (-4) = -8$.

5. B. All four sides are equal in length.

A rhombus is a quadrilateral with four equal sides. Its angles are 90° and its diagonals are equal only when it is also a square, and it always has two pairs of parallel sides.

6. A. 60 cm²

The area of a parallelogram is base × perpendicular height: $12 \times 5 = 60$ cm². Using the slanted side gives $12 \times 6 = 72$, which is too big, and 34 cm is the perimeter.

7. D. 24

A negative multiplied by a negative gives a positive: $6 \times 4 = 24$.

8. C. 3/5

A covers 2 of the 5 sectors, so the probability of not landing on A is $1 - 2/5 = 3/5$.

9. A. 7 °C

The thermometer reads −4 °C. Rising 11 degrees: $-4 + 11 = 7$, so it was 7 °C. Answering −15 °C means subtracting instead of adding.

10. C. 2/9

2/9 = 0.222… with the 2 repeating forever. The others stop: 3/8 = 0.375, 7/20 = 0.35 and 9/25 = 0.36. A fraction in simplest form stops only when its denominator has no prime factors other than 2 and 5.

11. A. √60

The arrow is at about 7.75, and 7.75×7.75 is about 60. Check the others: √50 is just above 7, √40 is below 7 and √70 is above 8.

12. C. 720°

A hexagon can be split into 4 triangles from one vertex, and $4 \times 180° = 720°$. In general the sum is $(n - 2) \times 180°$.

13. D. 2/3

The numbers that are greater than 4 or even are 2, 4, 5 and 6. That is 4 of the 6 outcomes: 4/6 = 2/3. 6 is counted only once.

14. Answer: 3

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

15. B. 15 km/h

In the first 2 hours the cyclist covered 30 km, so the speed was $30 \div 2 = 15$ km/h. Between 2 and 3 hours the graph is flat: the cyclist stopped.

16. Answer: 115

The exterior angle of a triangle equals the sum of the two opposite interior angles: $x = 50 + 65 = 115$.

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17. D. 3x

12 ÷ 4 = 3, $x^2 \div x = x$ and y ÷ y = 1, so the answer is 3x.

18. C. 110°

Neighbouring angles in a parallelogram are co-interior angles between parallel sides, so they add to 180°: 180° − 70° = 110°.

19. B. y = 3 − 2x

When x = 0, y = 3, and y falls by 2 each time x rises by 1, so y = 3 − 2x. Check x = −1: 3 + 2 = 5.

20. C. 125°

One arm of the angle lies along 0° on the outer scale, so read the outer scale where the other arm crosses it: 125°. Reading the inner scale by mistake gives 55°.

21. Answer: 42

There are 11 scores, so the median is the 6th: 31, 34, 36, 40, 42, 42, ... The 6th score is 42.

22. B. 3^6

Raising a power to a power multiplies the indices: $(3^2)^3 = 3\text{^}(2 \times 3) = 3^6$. 3^5 adds the indices instead.

23. B. 124

120 + 38 − 15 + 22 − 41 = 124. Treating every change as an increase gives 236.

24. D. 5(3x + 2)

The highest common factor of 15x and 10 is 5: 15x + 10 = 5(3x + 2). Expanding 3(5x + 2) gives 15x + 6.

25. C. 25%

The profit is $10, and 10/40 = 25% of the cost price. 20% divides by the selling price.

26. D. 1/3

1 ÷ 3 = 0.333..., so 0.333... = 1/3. 3/10 is exactly 0.3, which stops.

27. D. 3/4

There are 7 + 3 + 5 + 5 = 20 people, and 7 + 3 + 5 = 15 like at least one: 15/20 = 3/4.

28. C. 4.5

If the number is n, then 3n − 5 = n + 4. Subtracting n from both sides gives 2n − 5 = 4, so 2n = 9 and n = 4.5. Check: 3 × 4.5 − 5 = 8.5, which is 4 more than 4.5.

29. Answer: 10 km

29 = 2.5k + 4, so 2.5k = 25 and k = 10. Check: 2.5 × 10 + 4 = 29.

30. Answer: 27 cm^2

Split the shape into pieces. The rectangle along the bottom is 6 × 3 = 18 cm^2. The rectangle at the top left is 3 × 2 = 6 cm^2. The triangle at the top right is half of a 3 by 2 rectangle, which is 3 cm^2. Total: 18 + 6 + 3 = 27 cm^2.

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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 2, with the working behind every mark.

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