Maths Year 9 — Practice Exam 4 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. A. 1/2

"Of" means multiply: 2/3 × 3/4 = 6/12 = 1/2. 5/7 adds the tops and the bottoms, and 17/12 is the sum of the two fractions.

2. C. 120°

A hexagon splits into 4 triangles, so its angles add to 4 × 180° = 720°. Each of the 6 equal angles is 720° ÷ 6 = 120°. 60° is an exterior angle.

3. Answer: 8

The sum is 40, and 40 ÷ 5 = 8.

4. C. 60°

A full circle is 360°, and 1/6 of 360° is 60°. 16.7 is 1/6 written as a percentage, not an angle.

5. C. 1/8

A negative index means a reciprocal: $2^{-3} = 1/2^3 = 1/8$. It is not negative.

6. C. 120 km/h

1 hour 15 minutes is 1.25 hours, and 150 ÷ 1.25 = 120 km/h. Treating 1 h 15 min as 1.15 hours, or dividing by 1.5, gives the wrong speed.

7. A. surveying every student in the school

A census collects data from every member of the population. The others are samples.

8. A. 3^6

When powers of the same base are multiplied, the indices are added: $3^4 \times 3^2 = 3^{4+2} = 3^6$. Multiplying the indices gives 3^8, and 9^6 multiplies the bases as well.

9. A. √49

√49 = 7, which can be written as the fraction 7/1. √2, √10 and π cannot be written as fractions.

10. Answer: $600

Simple interest I = Prn = 5000 × 0.04 × 3 = $600.

11. A. 5/12

tan θ = opposite ÷ adjacent. The side opposite θ is 5 and the side next to θ (not the hypotenuse) is 12, so tan θ = 5/12.

12. B. 4.5×10^{-4}

Move the decimal point 4 places to the right to get 4.5, a number between 1 and 10, so $0.00045 = 4.5 \times 10^{-4}$. 45×10^{-5} has the right value but 45 is not between 1 and 10.

13. B. at x = −2 and x = 2

The graph crosses the x-axis where y = 0: $x^2 - 4 = 0$, so $x^2 = 4$ and $x = \pm 2$. y = −4 is where it crosses the y-axis.

14. C. 3 km

6 cm on the map is 6 × 50 000 = 300 000 cm in real life. 300 000 cm = 3000 m = 3 km.

15. B. 50

Angle a and the 50° angle are alternate angles between the parallel lines, so a = 50. 60 is the third angle inside the triangle, 180 − 50 − 70.

16. A. 9/25

With replacement the draws are independent: 3/5 × 3/5 = 9/25. 3/10 is the answer without replacement.

17. Answer: 17

Students 160 cm or taller are in the last two groups: 12 + 5 = 17.

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18. B. $y = -2x + 3$

In $y = mx + c$, m is the gradient and c is the y-intercept: $y = -2x + 3$.

19. A. 5/36

The table has 36 equally likely totals and 5 of them are 8: 2 + 6, 3 + 5, 4 + 4, 5 + 3 and 6 + 2. The probability is 5/36. 1/8 assumes the totals 2 to 12 are equally likely.

20. Answer: 152

The values go up by 3, so term n is $3n + 2$. The 50th term is $3 \times 50 + 2 = 152$.

21. B. 11.5 cm

Any length from 11.5 cm up to 12.5 cm rounds to 12 cm, so the shortest possible length is 11.5 cm.

22. Answer: 10

The scale factor is $15 \div 6 = 2.5$, so $w = 4 \times 2.5 = 10$ cm.

23. D. 3^7

Subtract the indices: $5 - (-2) = 7$, so the answer is 3^7.

24. Answer: 5

P to Q goes 3 across and 4 up. By Pythagoras, the distance is $\sqrt{(3^2 + 4^2)} = \sqrt{(9 + 16)} = \sqrt{25} = 5$.

25. B. 01:35

21:45 plus 3 hours is 00:45, and 50 more minutes is 01:35.

26. B. B

$7^2 = 49$, which is just below 50, so $\sqrt{50}$ is a little more than 7. Point B, at 7.1, is closest. C is at 7.5, and $7.5^2 = 56.25$.

27. D. 5x/4

Write x/2 as 2x/4. Then 3x/4 + 2x/4 = 5x/4.

28. B. $300

Each year the interest is 5% of $2000 = $100. Over 3 years that is 3 × $100 = $300. $2300 is the total amount, not the interest, and $315.25 is compound interest.

29. A. $(100 - 25\pi)$ cm²

The square is 100 cm². The quarter circle is $\frac{1}{4} \times \pi \times 10^2 = 25\pi$ cm². The shaded part is $(100 - 25\pi)$ cm², about 21.5 cm².

30. Answer: −3

The gradient is $(5 - 1) \div (4 - 2) = 2$. Going back 2 units from x = 2 to x = 0 lowers y by 4: $1 - 4 = -3$.

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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 9 — Practice Exam 4, with the working behind every mark.

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Numeracy — calculator	30	30

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