Maths Year 9 — Practice Exam 1 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. B. 12
Each of the 2 coin results can go with each of the 6 die results: 2 × 6 = 12 outcomes. 8 adds the numbers instead of multiplying.

2. B. 8 and 9
$8^2 = 64$ and $9^2 = 81$, and 70 is between 64 and 81, so $\sqrt{70}$ is between 8 and 9.

3. Answer: 7 students
Scores of 30 or more are in the 30–39 and 40–49 groups: 5 + 2 = 7 students.

4. D. 3/8
0.375 = 375/1000, and dividing the top and bottom by 125 gives 3/8. 37/100 is 0.37, not 0.375.

5. B. 6x − 15
Multiply both terms in the brackets by 3: 3 × 2x = 6x and 3 × (−5) = −15. 6x − 5 multiplies only the first term.

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

7. 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.

8. Answer: 0.75
For events that cannot happen together, Pr(A or B) = Pr(A) + Pr(B) = 0.3 + 0.45 = 0.75.

9. Answer: 152
The values go up by 3, so term n is 3n + 2. The 50th term is 3 × 50 + 2 = 152.

10. C. $\sqrt{20}$
20 is not a perfect square, so $\sqrt{20}$ cannot be written as a fraction: it is irrational. $\sqrt{49} = 7$, and 0.25 and 3/7 are fractions.

11. Answer: 10
The scale factor is 15 ÷ 6 = 2.5, so w = 4 × 2.5 = 10 cm.

12. Answer: 8.5
In order: 4, 7, 8, 9, 11, 15. With six values, the median is the mean of the middle two: (8 + 9) ÷ 2 = 8.5.

13. Answer: 3
Expand: 4x + 8 = 2x + 14. Subtract 2x and 8: 2x = 6, so x = 3.

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

15. B. 20π cm²
The curved surface unrolls into a rectangle 2πr long and h high: 2π × 2 × 5 = 20π cm². 28π includes the two circular ends.

16. Answer: 25
y = kx with k = 10 ÷ 4 = 2.5. When x = 10, y = 25.

17. C. 1/4
Red covers half the spinner each time, and the spins are independent: 1/2 × 1/2 = 1/4.

18. B. 6.25%
1.5 ÷ 24 = 0.0625 = 6.25%. (1.5 hours is 1/16 of a day.)

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19. D. $x = 10 \sin 35°$

x is opposite the 35° angle and 10 is the hypotenuse, so $\sin 35° = x/10$ and $x = 10 \sin 35°$.

20. C. 80π cm³

The radius is 4 cm, so $V = \pi r^2 h = \pi \times 16 \times 5 = 80\pi$ cm³. 320π cm³ uses the diameter as the radius.

21. A. $r = C \div (2\pi)$

Divide both sides by 2π: $r = C \div (2\pi)$.

22. Answer: 13

By Pythagoras' theorem, $x^2 = 5^2 + 12^2 = 25 + 144 = 169$, so $x = 13$.

23. C. 90π cm³

Volume $= \pi r^2 h = \pi \times 3^2 \times 10 = 90\pi$ cm³. 30π forgets to square the radius, and 60π uses 2×3 instead of 3^2.

24. A. $x^2 + 8x + 15$

$x \times x = x^2$, $x \times 5 + 3 \times x = 8x$ and $3 \times 5 = 15$, so $(x + 3)(x + 5) = x^2 + 8x + 15$.

25. D. (2, 4)

Average the coordinates: $x = (-4 + 8) \div 2 = 2$ and $y = (6 + 2) \div 2 = 4$, so the midpoint is (2, 4). (6, 2) halves the differences instead of the sums.

26. A. $h = 2A/b$

Multiply both sides by 2: $2A = bh$. Divide both sides by b: $h = 2A/b$. $h = A/2b$ divides by 2 instead of multiplying.

27. 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.

28. B. $594

After the rise: $660. A 10% fall takes off $66, leaving $594. The two changes do not cancel because the second 10% is of a larger amount.

29. Answer: 35

The two marked angles are co-interior angles between parallel lines, so they add to 180°: $3x + x + 40 = 180$, $4x = 140$, $x = 35$.

30. Answer: 50

The base angle next to the 115° exterior angle is $180 - 115 = 65°$, and the other base angle is also 65°. So $x = 180 - 65 - 65 = 50$.

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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 1, with the working behind every mark.

STILL TO COME	QUESTIONS	MARKS
Numeracy — calculator	30	30

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