Maths Year 10 — Practice Exam 3 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. Answer: 6
The range is the largest value minus the smallest: 6 − 0 = 6.

2. A. $x \geq 2$
The mark sits at 2 and the label shows every value from 2 upwards is included, so the inequality is $x \geq 2$.

3. B. 3 m
The edge length is the cube root of the volume, and $3^3 = 27$, so each edge is 3 metres. Option B is the square root.

4. Answer: 10
Counting every dot gives 1 + 2 + 4 + 2 + 1 = 10 children.

5. Answer: 100
Adding every cell gives 24 + 16 + 31 + 29 = 100 people.

6. D. (1, 1)
Average the coordinates: ((−3 + 5) ÷ 2, (4 + (−2)) ÷ 2) = (1, 1).

7. C. $x = 4$, $y = 2$
Adding the two equations eliminates y: $4x = 16$, so $x = 4$. Substituting into $x - 2y = 0$ gives $y = 2$. Checking in the first equation: 12 + 4 = 16.

8. C. 0.25
A negative index gives the reciprocal: $2^{-2} = 1 \div 2^2 = 1/4 = 0.25$. The mark sits a quarter of the way to 1, which confirms it.

9. C. 36π cm³
$V = (4/3)\pi r^3 = (4/3) \times \pi \times 27 = 36\pi$ cm³.

10. Answer: 60
V = ⅓ × base area × height = ⅓ × 36 × 5 = 60 cm³.

11. C. 0.6
Mutually exclusive events cannot both happen, so Pr(A or B) = Pr(A) + Pr(B) = 0.35 + 0.25 = 0.6. No overlap needs subtracting.

12. B. 0.6
There are 24 + 16 = 40 people under 18, of whom 24 answered Yes. That is 24 ÷ 40 = 0.6. Option B divides by everyone surveyed instead.

13. D. $4\sqrt{3}$ cm
The side is $\sqrt{48}$. Since $48 = 16 \times 3$, $\sqrt{48} = 4\sqrt{3}$ cm. Option B is equal in value but not in simplest form.

14. B. Q
$5.5^2 = 30.25$, which is very close to 30, so $\sqrt{30} \approx 5.48$. Point Q, at 5.5, is closest.

15. Answer: 13
The radius, height and slant height form a right-angled triangle: $\text{slant}^2 = 5^2 + 12^2 = 169$, so the slant height is 13 cm.

16. A. $27x^6y^3$
Cubing every factor gives $(3x^2y)^3 = 3^3 \times (x^2)^3 \times y^3 = 27x^6y^3$. Option B squares the 3 instead of cubing it.

17. C. 75%
35 is the lower quartile and 70 is the maximum, so about three quarters of the scores lie between them.

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18. D. x^5

$(x^4)^{(1/2)} = x^2$, and $x^2 \times x^3 = x^5$.

19. Answer: 2

The parabola is symmetric about its turning point, and its x-intercepts are 1 and 3. The turning point sits halfway between them, at $x = 2$.

20. D. $3(x - 2)(x + 2)$

Take out the common factor 3 first: $3(x^2 - 4)$. The bracket is a difference of two squares, so it factorises to $3(x - 2)(x + 2)$. Option B is correct but not fully factorised.

21. Answer: 7

By Pythagoras, the missing side squared is $25^2 - 24^2 = 625 - 576 = 49$, so the side is 7 cm.

22. C. 25 m

Substituting $t = 2$ gives $h(2) = 45 - 5 \times 4 = 45 - 20 = 25$ metres. Option B squares only after subtracting.

23. B. $x = 2$ or $x = -2$, and only $x = 2$ is a valid length

Factorising the difference of two squares gives $(x - 2)(x + 2) = 0$, so $x = 2$ or $x = -2$. A side length cannot be negative, so only $x = 2$ makes sense here.

24. Answer: A

Evaluating each gives $2^5 = 32$, $3^3 = 27$ and $5^2 = 25$, so A is the largest. A bigger base does not always win — the index matters more here.

25. A. $w^2 + 3w - 40 = 0$

The length is $w + 3$, so the area is $w(w + 3) = 40$, which rearranges to $w^2 + 3w - 40 = 0$. Solving gives $w = 5$, so the garden is 5 m by 8 m.

26. Answer: 5

x is opposite the 30° angle and 10 cm is the hypotenuse: $x = 10 \times \sin 30° = 10 \times 1/2 = 5$.

27. A. $2\sqrt{3}$ cm

The diagonal of a face is $\sqrt{(2^2 + 2^2)} = \sqrt{8}$. Then the space diagonal is $\sqrt{(8 + 2^2)} = \sqrt{12} = 2\sqrt{3}$ cm.

28. Answer: 10

Each exterior angle is $180° - 144° = 36°$, and the exterior angles add to 360°, so there are $360 \div 36 = 10$ sides.

29. B. $\sqrt{3}$ cm

The height splits the triangle into two right-angled triangles with hypotenuse 2 and base 1, so the height is $\sqrt{(4 - 1)} = \sqrt{3}$ cm.

30. C. $30\sqrt{2}$

$3 \times 2 = 6$ and $\sqrt{5} \times \sqrt{10} = \sqrt{50} = 5\sqrt{2}$, so the product is $6 \times 5\sqrt{2} = 30\sqrt{2}$.

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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 10 — Practice Exam 3, with the working behind every mark.

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Numeracy — calculator	30	30

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