Maths Year 9 — Practice Exam 2 — Answers & Explanations

Answers to the 30 questions in the free preview.

Numeracy — non-calculator

1. A. 3.45×10^7

Move the decimal point 7 places left to get 3.45, a number between 1 and 10: 3.45×10^7. 345×10^5 has the right value but is not in scientific notation.

2. B. 12π cm

$C = 2\pi r = 2 \times \pi \times 6 = 12\pi$ cm. 36π is the area, not the circumference.

3. Answer: 400 km

The speed is $240 \div 3 = 80$ km/h. In 5 hours the car travels $80 \times 5 = 400$ km.

4. B. 25π cm²

Area $= \pi r^2 = \pi \times 5^2 = 25\pi$ cm². 10π cm is the circumference, and 100π uses the diameter in place of the radius.

5. Answer: 72

The bus sector is 15%, and 10% of 480 is 48 and 5% is 24, so 15% is 72.

6. A. $x(x + 7)$

Both terms have a factor of x: $x^2 + 7x = x(x + 7)$.

7. C. 1000 L

The volume is $2 \times 1 \times 0.5 = 1$ m³, and 1 m³ = 1000 L.

8. D. 1 1/4

Any non-zero number to the power 0 is 1, and $4^{-1} = 1/4$. So the sum is 1 1/4.

9. C. 13 m

$6.5 \times 200 = 1300$ cm, which is 13 m.

10. Answer: 94 cm²

There are two faces of each size: $5 \times 4 = 20$, $5 \times 3 = 15$ and $4 \times 3 = 12$. Surface area $= 2 \times (20 + 15 + 12) = 94$ cm². 60 is the volume in cubic centimetres.

11. Answer: 16

Five numbers with a mean of 12 add to $5 \times 12 = 60$. The four known numbers add to $8 + 10 + 15 + 11 = 44$, so the fifth is $60 - 44 = 16$.

12. C. 1/3

Only the 45 Year 10 students count, and 15 of them catch the bus: 15/45 = 1/3. 15/100 divides by every student in the table.

13. 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 $7.5^2 = 56.25$.

14. B. 24 m

The hypotenuse is 25 m, so $y^2 = 25^2 - 7^2 = 625 - 49 = 576$ and y = 24 m. 26 m wrongly adds the squares.

15. D. 1.8×10^7

$6 \times 3 = 18$ and $10^4 \times 10^2 = 10^6$, giving $18 \times 10^6 = 1.8 \times 10^7$.

16. D. March

The differences are 12, 11, 14 and 12 degrees. The greatest, 14 degrees, is in March.

17. C. 1080°

The sum is $(n - 2) \times 180° = 6 \times 180° = 1080°$. 135° is each angle of a regular octagon.

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18. C. 0.050

The first significant figure is the 4. The next digit after 49 is 6, so 49 rounds up to 50: 0.050. Writing 0.05 shows only one significant figure.

19. D. (6, 2)

Enlarging from the origin multiplies both coordinates by the scale factor: P(3, 1) becomes (6, 2).

20. C. $4x(x + 3)$

The highest common factor of $4x^2$ and $12x$ is $4x$. $4x \times x = 4x^2$ and $4x \times 3 = 12x$, so $4x^2 + 12x = 4x(x + 3)$.

21. C. 2

From A to B the rise is $5 - (-3) = 8$ and the run is $2 - (-2) = 4$. Gradient = rise ÷ run = 8 ÷ 4 = 2. 1/2 is run ÷ rise.

22. C. 8

Multiply both sides by 3: $2x - 1 = 15$. Then $2x = 16$, so $x = 8$.

23. Answer: 17

$(-3)^2 = 9$ and $2 \times (-4) = -8$. Then $9 - (-8) = 9 + 8 = 17$.

24. A. 3.9×10^{-2}

$3.9 \times 10^{-2} = 0.039$, $4.2 \times 10^{-3} = 0.0042$, $5.1 \times 10^{-4} = 0.00051$ and $1.2 \times 10^{-3} = 0.0012$. The smallest negative power gives the largest number.

25. D. positively skewed

Most values are bunched at the low end with a long tail stretching to the right, towards the higher values. That is a positive skew.

26. D. $x < 6$

Add 5: $3x < 18$. Divide by 3: $x < 6$.

27. 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: $1 - 4 = -3$.

28. Answer: 110 tiles

Design n is n rows of n + 1 tiles: $1 \times 2 = 2$, $2 \times 3 = 6$ and $3 \times 4 = 12$. Design 10 is $10 \times 11 = 110$ tiles.

29. A. 1

There are $4 + 9 + 6 + 3 + 1 = 23$ students, so the median is the 12th value. The first 4 have 0 siblings and the next 9 have 1, which covers the 5th to the 13th. The 12th has 1 sibling. 2 is the middle of the column headings, not of the data.

30. D. $40 + 2\pi$ m²

The rectangle is $10 \times 4 = 40$ m². The semicircle has diameter 4 m, so its radius is 2 m and its area is half of $\pi \times 2^2 = 2\pi$ m². $40 + 4\pi$ uses a whole circle.

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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 2, with the working behind every mark.

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