FREE SAMPLE: THE FIRST 3 QUESTIONS

MATHEMATICS — 30 QUESTIONS

Multiple choice · 45 minutes

Work through the questions in order, but do not spend too long on any one. Mark your best answer for every question, then check your work against the worked solutions.

1. Simplify 9b + 7x − 3b + 8x.

A 21bx

B 12b + 15x

C 6b − x

D 6b + 15x

2. Write $a^7 \times a^8$ as a single power.

A a^{56}

B a^1

C a^{15}

D a^{16}

3. Find the mean of this data set: 17, 12, 15, 4, 7.

A 55

B 12

C 13

D 11

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THE WORKED ANSWERS TO THOSE 3 QUESTIONS

1. Simplify 9b + 7x − 3b + 8x. [Simplifying expressions]

Correct answer: D — 6b + 15x

- Collect like terms: the b terms are 9b and −3b; the x terms are 7x and 8x.
- b: 6.
- Answer: 6b + 15x.
- Why the other options are wrong:
- A (21bx): Unlike terms were combined.
- B (12b + 15x): The sign of the second x term was ignored.
- C (6b − x): The y terms were subtracted.

LOS: MA4-ALG-C-01

> **KEY TAKEAWAY**
> Only like terms can be added or subtracted: add their coefficients and keep the variable.

2. Write $a^7 \times a^8$ as a single power. [Index laws]

Correct answer: C — a^{15}

- Same base, so add the powers (index law: a^m × a^n = a^(m+n)).
- 7 + 8 = 15.
- Answer: a^{15}.
- Why the other options are wrong:
- A (a^{56}): The powers were multiplied instead of added.
- B (a^1): The powers were subtracted.
- D (a^{16}): Check the addition of the powers.

LOS: MA4-IND-C-01

> **KEY TAKEAWAY**
> When multiplying powers with the same base, add the indices.

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3. Find the mean of this data set: 17, 12, 15, 4, 7. [Measures of centre and spread]

Correct answer: D — 11

- Add all 5 values: 55.
- Divide by 5: 55 ÷ 5 = 11.
- Why the other options are wrong:
- A (55): The scores were added but not divided.
- B (12): That is the median, not the mean.
- C (13): Check the addition or the division by 5.

LOS: MA4-DAT-C-02

KEY TAKEAWAY

Mean = sum of the values ÷ number of values.

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