TEXES CORE SUBJECTS EC–6 (391) · SUBJECT EXAM II: MATHEMATICS 902

Complete Guide to Passing Mathematics 902

10 Practice Questions — Covering Competencies 002–005

With Full Answer Key & Explanations

Watch the complete study guide video at:
www.teacherpreps.com/courses/texes-core-subjects-ec6-391

How to Use This Practice Set

This PDF contains 10 original practice questions drawn from the TExES Core Subjects EC-6 Mathematics (902) exam. Questions cover Number Concepts (2 questions), Patterns & Algebra (2 questions), Geometry & Measurement (2 questions), and Probability & Statistics (4 questions). Read each question carefully, select your answer, then check the highlighted correct response and explanation below it.

1. Competency 002 — Number Concepts and Operations

2. Competency 002 — Number Concepts and Operations

3. Competency 003 — Patterns and Algebra

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5. Competency 004 — Geometry and Measurement

6. Competency 004 — Geometry and Measurement

7. Competency 005 — Probability and Statistics

8. Competency 005 — Probability and Statistics

9. Competency 005 — Probability and Statistics

10. Competency 005 — Probability and Statistics

Tip: Cover the answer key with a sheet of paper while you work through each question. The correct answer is highlighted in green with a checkmark.

Question 1 of 10 Competency 002 — Number Concepts and Operations

What is 48 ÷ (2 + 4) × 3 − 25?

A ✓ −1

B 2

C 24

D −49

EXPLANATION

Follow order of operations: parentheses first — 2 + 4 = 6. Then 48 ÷ 6 = 8. Then 8 × 3 = 24. Finally 24 − 25 = −1. The trap is performing left-to-right without grouping the parentheses first.

Question 2 of 10 Competency 002 — Number Concepts and Operations

A jacket priced at $85 is discounted 30%, and the discounted price is then taxed at 8%. What is the final price?

A $63.56

B $71.40

C ✓ $64.26

D $59.50

EXPLANATION

Step 1: $85 × 0.70 = $59.50 after the 30% discount. Step 2: $59.50 × 1.08 = $64.26 after the 8% tax. B ($71.40) skips the tax. D ($59.50) stops after the discount without applying tax.

Question 3 of 10 Competency 003 — Patterns and Algebra

A line passes through (1, 1) and (–1, 5). Which equation represents this line?

A ✓ $y = -2x + 3$

B $y = 2x - 1$

C $y = -2x - 1$

D $y = 2x + 3$

EXPLANATION

Slope = (5 – 1) ÷ (–1 – 1) = 4 ÷ (–2) = –2. Using point (1, 1): 1 = –2(1) + b → b = 3. Equation: y = –2x + 3. B uses a positive slope — wrong direction. C has the right slope but wrong y-intercept.

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Question 4 of 10 Competency 003 — Patterns and Algebra

A scale model uses a ratio of 1 inch to 20 feet. If the model is 3.5 inches long, what is the actual length?

A 3.5 feet

B ✓ 70 feet

C 20 feet

D 17 feet

EXPLANATION

1 inch = 20 feet, so 3.5 inches = 3.5 × 20 = 70 feet. 1 model inch equals 240 actual inches, and 240 inches = 20 feet — that's the scale for 1 inch, not 3.5 inches. D subtracts instead of multiplies.

Question 5 of 10 Competency 004 — Geometry and Measurement

Points A(−3, 2) and B(5, −4) are plotted on a coordinate plane. What is the distance between them?

A 8

B 6

C ✓ 10

D $\sqrt{28}$

EXPLANATION

$\Delta x = 5 - (-3) = 8$; $\Delta y = -4 - 2 = -6$. Distance = $\sqrt{(8^2 + 6^2)} = \sqrt{(64 + 36)} = \sqrt{100} = 10$. A and B are just the individual Δx and Δy values — not the hypotenuse. D uses the wrong differences.

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Question 6 of 10 Competency 004 — Geometry and Measurement

Two parallel lines are cut by a transversal. One co-interior angle measures 135°. What is the other co-interior angle?

A ✓ 45°

B 135°

C 90°

D 55°

EXPLANATION

Co-interior (same-side interior) angles are supplementary — they sum to 180°. So the other angle = 180° − 135° = 45°. B (135°) is the alternate interior angle, not the co-interior pair. C (90°) would only apply if the lines were perpendicular.

Question 7 of 10 Competency 005 — Probability and Statistics

A bag contains 5 red, 3 blue, and 4 green marbles. One marble is drawn at random. What is the probability of NOT drawing red?

A 5/12

B ✓ 7/12

C 3/12

D 1/4

EXPLANATION

Total marbles = 5 + 3 + 4 = 12. Not red = 3 + 4 = 7. P(not red) = 7/12. A (5/12) is the probability of drawing red — the complement. C and D only count one non-red color instead of all non-red marbles.

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Question 8 of 10 Competency 005 — Probability and Statistics

A coin is flipped and a standard number cube is rolled. What is the probability of getting tails AND rolling a number greater than 4?

A 1/6

B 1/4

C 1/3

D ✓ 1/6

EXPLANATION

P(tails) = 1/2. P(greater than 4) = 2/6 = 1/3 (rolling 5 or 6). Independent events: 1/2 × 1/3 = 1/6. A common trap is adding instead of multiplying independent probabilities.

Question 9 of 10 Competency 005 — Probability and Statistics

A study shows students who sleep more tend to score higher on exams. Which conclusion is most appropriate?

A Sleeping more causes students to score higher on exams

B ✓ There is a positive correlation between sleep and exam scores

C Students who score higher need less sleep

D Sleep is the only factor that affects exam performance

EXPLANATION

The data shows an association (correlation), not causation. You can only conclude there is a positive correlation — more sleep is associated with higher scores. Claiming sleep CAUSES higher scores requires a controlled experiment, not an observational study.

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Question 10 of 10 Competency 005 — Probability and Statistics

In a normal distribution with mean 70 and standard deviation 8, approximately what percentage of scores fall between 62 and 78?

A 99.7%

B 95%

C 34%

D ✓ 68%

EXPLANATION

62 = 70 − 8 and 78 = 70 + 8, so the interval is exactly one standard deviation on each side of the mean. By the 68-95-99.7 rule, approximately 68% of data falls within ±1 standard deviation. 95% applies to ±2 SD; 99.7% applies to ±3 SD.

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