Midterm Exam — Answer Key

Foundations, Linear Equations, Inequalities, Functions & Systems of Equations

FOR TEACHER / SELF-CHECK USE

This midterm was written to cumulatively cover Units 0 through 4. Every solution below has been independently verified.

1	$(6-2)^2 = 16$. $3(16) = 48$. $48 \div 6 = 8$. $4+8 = 12$. **Answer: A — 12**
2	Product of powers: add exponents. $4+2 = 6$. **Answer: A — x^6**
3	Move the decimal 5 places right: $0.0000723 = 7.23 \times 10^{-5}$. **Answer: 7.23×10^{-5}**
4	Add 8: $5x = 30$. Divide by 5: $x = 6$. **Answer: A — $x = 6$**
5	Distribute: $3x+6 = 2x-1$. Subtract $2x$: $x+6 = -1$. Subtract 6: $x = -7$. **Answer: A — $x = -7$**
6	Subtract $2l$: $P - 2l = 2w$. Divide by 2: $w = (P - 2l)/2$. **Answer: $w = (P - 2l)/2$**
7	Subtract 7: $-3x \geq -15$. Divide by -3 and flip: $x \leq 5$. **Answer: A — $x \leq 5$**
8	$x+2 = 9 \rightarrow x = 7$, or $x+2 = -9 \rightarrow x = -11$. **Answer: A — $x = 7$ or $x = -11$**
9	Add 2 to all parts: $-3 \leq 3x < 9$. Divide by 3: $-1 \leq x < 3$. **Answer: $-1 \leq x < 3$**
10	$f(-2) = 3(-2) - 7 = -6 - 7$. **Answer: A — −13**
11	Slope $= (6-(-2))/(5-1) = 8/4$. **Answer: A — 2**
12	Slope-intercept form with slope -3 and y-intercept 4. **Answer: $y = -3x + 4$**
13	Substitute $y=3x-1$ into $2x+y=9$: $2x+3x-1=9 \rightarrow 5x=10 \rightarrow x=2$. $y=3(2)-1=5$. **Answer: A — $x = 2, y = 5$**
14	Add the equations: $2x = 12 \rightarrow x = 6$. $y = 10-6 = 4$. **Answer: A — $x = 6, y = 4$**

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Let x and y be the numbers. x + y = 50 and x = 3y − 2.
Substitute: (3y−2) + y = 50 → 4y − 2 = 50 → 4y = 52 → y = 13.
x = 3(13) − 2 = 37.
Answer: The numbers are 37 and 13

16

Let s = student tickets, a = adult tickets.
s + a = 150 and 4s + 7a = 840.
From the first equation, s = 150 − a. Substitute: 4(150−a) + 7a = 840 → 600 − 4a + 7a = 840 → 3a = 240 → a = 80.
s = 150 − 80 = 70.
Answer: 70 student tickets and 80 adult tickets