
5 ALGEBRA

The sum of two numbers is 51. The larger number is 15 more than twice the smaller. What is the smaller number?

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|--------|--------|
| (A) 15 | (B) 12 |
| (C) 18 | (D) 9 |
-

6 ALGEBRA

The sum of three consecutive integers is 63. What is the middle integer?

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|--------|--------|
| (A) 20 | (B) 19 |
| (C) 22 | (D) 21 |
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7 ALGEBRA

A car travels at a constant speed of 55 miles per hour. How far does it travel in 24 minutes?

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|--------|----------|
| (A) 22 | (B) 13.2 |
| (C) 24 | (D) 33 |
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8 ALGEBRA

A 45-gallon tank is 40% full. How many gallons are needed to fill the tank completely?

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|--------|--------|
| (A) 9 | (B) 18 |
| (C) 27 | (D) 30 |
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9 ALGEBRA

A student's first four test scores are 72, 85, 90, and 77. What score on the fifth test gives an average of exactly 84 for all five tests?

Answer

10 ALGEBRA

A father is currently 4 times as old as his daughter. In 12 years, he will be twice as old as she is. How old is the daughter now?

- | | |
|--------|--------|
| (A) 12 | (B) 6 |
| (C) 18 | (D) 24 |

11 ALGEBRA

Plan A: \$45 + \$0.15/GB. Plan B: \$25 + \$0.40/GB. At how many GB do both plans cost the same?

- (A) 50 (B) 100
(C) 80 (D) 65

12 ALGEBRA

50 microcontrollers (\$6 standard, \$14 advanced) cost \$460 total. How many advanced were ordered?

Answer

Answer key

#	ANSWER	TOPIC
1	A	Word Problems
2	D	Percentages
3	C	Word Problems
4	70	Ratios
5	B	Word Problems
6	D	Word Problems
7	A	Word Problems
8	C	Word Problems
9	96	Word Problems
10	B	Word Problems
11	C	Word Problems
12	20	Word Problems

Worked solutions

1 **A**

HOW $25 + 4v = 73$ gives $4v = 48$, so $v = 12$.

COMMON MISTAKE Subtracting 25 from 73 but forgetting to divide by 4.

2 **D**

HOW You pay $100\% - 25\% = 75\%$, and $0.75 \times 800 = 600$. The sale price is \$600.

COMMON MISTAKE Answering \$200, which is the discount amount, not the price you pay.

3 **C**

HOW The bottle holds $3 \times 1,000 = 3,000$ milliliters. Then $3,000 \div 250 = 12$ glasses. Check: $12 \times 250 = 3,000$.

COMMON MISTAKE Treating 3 liters as 2,000 milliliters, which gives 8 glasses.

4 70

HOW Yes responses make up 7 of the $7 + 3 = 10$ equal parts, so $\frac{7}{10} = 70\%$ of responses were yes.

COMMON MISTAKE Dividing 7 by 3 instead of by the total number of parts.

5 B

HOW Let the smaller be x . Then $x + (2x + 15) = 51$, so $3x = 36$ and $x = 12$.

COMMON MISTAKE Setting up $x + 2x = 51 + 15$ or forgetting to include the 15 in the larger number.

6 D

HOW $n + (n + 1) + (n + 2) = 63$ gives $3n + 3 = 63$, so $n = 20$ and the middle is 21.

COMMON MISTAKE Forgetting the middle is $n + 1$, not n (giving 20).

7 A

HOW 24 minutes is 0.4 hour, so the car travels $55(0.4) = 22$ miles.

COMMON MISTAKE Multiplying 55 by 0.24 instead of by 0.4.

8 C

HOW The tank contains $0.4(45) = 18$ gallons, so $45 - 18 = 27$ gallons are needed to fill it.

COMMON MISTAKE Reporting 18, the amount already in the tank, instead of the amount needed.

9 96

HOW The target total is $5(84) = 420$. The first four scores total 324, so the fifth score must be $420 - 324 = 96$. Check: $(72 + 85 + 90 + 77 + 96)/5 = 84$.

COMMON MISTAKE Averaging the four known scores and adjusting that average instead of using the required total.

10 B

HOW The father is $4d$ now, so $4d + 12 = 2(d + 12)$. Expanding gives $4d + 12 = 2d + 24$, so $2d = 12$ and $d = 6$. Check: $24 + 12 = 36$ and $2(6 + 12) = 36$.

COMMON MISTAKE Doubling only the daughter's current age instead of her age in 12 years.

11 C

HOW $45 + 0.15g = 25 + 0.40g$, so $20 = 0.25g$ and $g = 80$.

COMMON MISTAKE Subtracting bases but adding rates, or misplacing the decimal.

12 20

HOW $6(50 - a) + 14a = 460$, so $300 + 8a = 460$ and $a = 20$.

COMMON MISTAKE Solving for the standard count (30) instead of advanced.