

A.N.5: Fractions: Solve algebraic problems arising from situations that involve fractions, decimals, percents (decrease/increase and discount) and proportionality/direct variation

- 1 A boy got 50% of the questions on a test correct. If he had 10 questions correct out of the first 12, and $\frac{1}{4}$ of the remaining questions correct, how many questions were on the test?
 - 1) 16
 - 2) 24
 - 3) 26
 - 4) 28
- 2 Laura goes shopping. She spends one-fourth of her money on a pair of shorts, and one-third of her remaining money on a belt. If Laura has \$42 left after these two purchases, how much money did she have when she started shopping?
 - 1) \$84
 - 2) \$126
 - 3) \$144
 - 4) \$504
- 3 In his will, a man leaves one-half of his money to his wife, one-half of what is then left to his older child, and one-half of what is then left to his younger child. His two cousins divide the remainder equally, each receiving \$2,000. What was the total amount of money in the man's will?
 - 1) \$40,000
 - 2) \$32,000
 - 3) \$24,000
 - 4) \$16,000
- 4 There are 28 students in a mathematics class. If $\frac{1}{4}$ of the students are called to the guidance office, $\frac{1}{3}$ of the remaining students are called to the nurse, and, finally, $\frac{1}{2}$ of those left go to the library, how many students remain in the classroom?
- 5 In a town election, candidates *A* and *B* were running for mayor. There were 30,500 people eligible to vote, and $\frac{3}{4}$ of them actually voted. Candidate *B* received $\frac{1}{3}$ of the votes cast. How many people voted for candidate *B*? What percent of the votes cast, to the *nearest tenth of a percent*, did candidate *A* receive?
- 6 After an ice storm, the following headlines were reported in the *Glacier County Times*:

Monday: Ice Storm Devastates County — 8 out of every 10 homes lose electrical power

Tuesday: Restoration Begins — Power restored to $\frac{1}{2}$ of affected homes

Wednesday: More Freezing Rain — Power lost by 20% of homes that had power on Tuesday

Based on these headlines, what fractional portion of homes in Glacier County had electrical power on Wednesday?

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Answer Section

1 ANS: 4

$$50\% \times x = 10 + \frac{1}{4}(x - 12)$$

$$.5x = 10 + .25x - 3$$

$$.25x = 7$$

$$x = 28$$

PTS: 2 REF: 060116a TOP: Fractions

2 ANS: 1

If x represents the amount of money Laura had when she started shopping, she has $\frac{3}{4}x$ left after she buys the

shorts. $\frac{3}{4}x - \frac{1}{3}\left(\frac{3}{4}x\right) = 42$

$$\frac{3}{4}x - \frac{1}{4}x = 42$$

$$\frac{2}{4}x = 42$$

$$x = 84$$

PTS: 2 REF: spring9816a TOP: Fractions

3 ANS: 2

wife	50.00%	$\frac{2000}{6.25} = \frac{x}{100}$
older child	25.00%	
younger child	12.50%	$6.25x = 200000$
cousin #1	6.25%	
cousin #2	6.25%	$x = 32000$

PTS: 2 REF: 080114a TOP: Fractions

4 ANS:

7. If $\frac{1}{4}$ of the students went to guidance, 21 students were left ($28 \times \frac{1}{4} = 7$). If $\frac{1}{3}$ of the students went to the nurse, 14 students were left ($21 \times \frac{1}{3} = 7$). If $\frac{1}{2}$ of the students went to the library, 7 students were left ($14 \times \frac{1}{2} = 7$).

PTS: 3 REF: 080228a TOP: Fractions

5 ANS:

$$\frac{3}{4} \times 30500 = 22875 \text{ voted}$$

$$7,625 \text{ and } 66.7\%. \quad \frac{1}{3} \times 22875 = 7625 \text{ voted for B}$$

$$\frac{22875 - 7625}{22875} \approx 66.7\% \text{ voted for A}$$

PTS: 3 REF: 060328a TOP: Fractions

6 ANS:

$\frac{48}{100}$. 20% of the homes had electrical power after Monday. Power was restored to $\frac{1}{2}$ the affected homes on Tuesday. If 80% were affected, 40% of the homes had electrical power restored, totaling 60%. If power was lost by 20% of the homes that had power, 12% ($60\% \times 20\%$) lost power, leaving 48% ($60\% - 12\%$) with power.

PTS: 3 REF: 080029a TOP: Fractions