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2007 Q6

6. The average cost of a long-distance call in the USA in 1985 was 41 cents per minute, and the average cost of a long-distance call in the USA in 2005 was 7 cents per minute. Find the approximate percent decrease in the cost per minute of a long-distance call.

(A) 7 **(B)** 17 **(C)** 34 **(D)** 41 **(E)** 80

6. **(E)** The difference in the cost of a long-distance call per minute from 1985 to 2005 was $41 - 7 = 34$ cents. The percent decrease is $100 \times \frac{34}{41} \approx 100 \times \frac{32}{40} = 100 \times \frac{8}{10} = 80\%$.

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1989 Q7

7. If the value of 20 quarters and 10 dimes equals the value of 10 quarters and n dimes, then n =

A) 10 B) 20 C) 30 D) 35 E) 45

7. D The value of 20 quarters and 10 dimes is \$5.00 + \$1.00 = \$6.00. Since the value of 10 quarters is \$2.50, the remaining \$3.50 must consist of 35 dimes.

OR

We can think of the 20 – 10 = 10 quarters as being "traded in" for dimes. The value of 10 quarters, \$2.50, is 25 dimes. Combining them with the original 10 dimes gives a total of 35 dimes.

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2010 Q7

7. Using only pennies, nickels, dimes, and quarters, what is the smallest number of coins Freddie would need so he could pay any amount of money less than a dollar?

(A) 6 **(B)** 10 **(C)** 15 **(D)** 25 **(E)** 99

7. **Answer (B):** Four pennies are needed to make small change. Adding two nickels means that change up to fourteen cents can be made as efficiently as possible. Adding a dime extends the efficiency up to 24 cents. Adding three quarters permits any amount of change up to \$0.99 .

$$4 \text{ pennies} + 2 \text{ nickels} + 1 \text{ dime} + 3 \text{ quarters} = 10 \text{ coins worth } \$0.99$$

Note that 4 pennies, 1 nickel, 2 dimes, and 3 quarters also satisfies the requirements. For 10 to be the smallest number of coins, one must prove that 9 coins will not work. Freddie will still need at least 4 pennies and 1 nickel to make any amount up to 9. Freddie will still need at least 1 more nickel and 1 dime to make any amount up to 24. If Freddie chose only 2 quarters, then he would need at least 9 other coins (4 dimes, 1 nickel, and 4 pennies) to reach 99 cents. He would need at least 11 coins. Thus 10 is the smallest number of coins as shown above.

1992 Q8

8. A store owner bought 1500 pencils at \$0.10 each. If he sells them for \$0.25 each, how many of them must he sell to make a profit of exactly \$100.00?

(A) 400 (B) 667 (C) 1000 (D) 1500 (E) 1900

8. (C) Since he bought 1500 pencils at \$0.10 each, he paid $1500 \times \$0.10 = \$150$. To make \$100 profit he must take in $\$150 + \$100 = \$250$. Therefore, selling the pencils for \$0.25 each, he must sell $\$250 \div \$0.25 = 1000$ pencils.

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1995 Q8

8. An American traveling in Italy wishes to exchange American money (dollars) for Italian money (lire). If 3000 lire = \$1.60, how many lire will the traveler receive in exchange for \$1.00?

(A) 180 (B) 480 (C) 1800 (D) 1875 (E) 4875

8. (D) $\$1.00 = \$1.00 \times \dfrac{3000 \text{ lire}}{\$1.60} = 1875$ lire.

OR

$\dfrac{\$1.00}{\$1.60} = \dfrac{5}{8}$, so \$1.00 is $\dfrac{5}{8}$ of \$1.60. Thus, the number of lire is $\dfrac{5}{8}$ of 3000 or 1875 lire.

OR

Use the proportion $\dfrac{3000 \text{ lire}}{160 \text{ cents}} = \dfrac{x \text{ lire}}{100 \text{ cents}}$. Solving for x gives 1875 lire.

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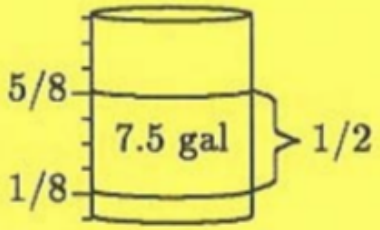
1996 Q10

10. When Walter drove up to the gasoline pump, he noticed that his gasoline tank was 1/8 full. He purchased 7.5 gallons of gasoline for $10. With this additional gasoline, his gasoline tank was then 5/8 full. The number of gallons of gasoline his tank holds when it is full is

(A) 8.75 (B) 10 (C) 11.5 (D) 15 (E) 22.5

10. (D) The gasoline tank going from 1/8 to 5/8 full represents an increase of $5/8 - 1/8 = 1/2$ tank. Since half a tank is 7.5 gallons, it follows that a full tank is $2 \times 7.5 = 15$ gallons.



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2002 Q8

Problems 8,9 and 10 use the data found in the accompanying paragraph and table:

Juan's Old Stamping Grounds

Juan organizes the stamps in his collection by country and by the decade in which they were issued. The prices he paid for them at a stamp shop were: Brazil and France, 6¢ each, Peru 4¢ each, and Spain 5¢ each. (Brazil and Peru are South American countries and France and Spain are in Europe.)

Number of Stamps by Decade

Country	'50s	'60s	'70s	'80s
Brazil	4	7	12	8
France	8	4	12	15
Peru	6	4	6	10
Spain	3	9	13	9

Juan's Stamp Collection

8. How many of his European stamps were issued in the '80s?

(A) 9 (B) 15 (C) 18 (D) 24 (E) 42

8. (D) There are 15 French stamps and 9 Spanish stamps issued in the '80s. So there are $15 + 9 = 24$ European stamps listed in the table in the '80s.

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Juan's Stamp Collection

9. His South American stamps issued before the '70s cost him

(A) \$0.40 **(B)** \$1.06 **(C)** \$1.80 **(D)** \$2.38 **(E)** \$2.64

9. **(B)** His South American stamps issued before the '70s include $4 + 7 = 11$ from Brazil that cost $11 \times \$0.06 = \$0.66$ and $6 + 4 = 10$ from Peru that cost $10 \times \$0.04 = \$0.40$. Their total cost is $\$0.66 + \$0.40 = \$1.06$.

2002 Q10

Problems 8,9 and 10 use the data found in the accompanying paragraph and table:

Juan's Old Stamping Grounds

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Juan's Stamp Collection

10. **(E)** The '70s stamps cost: Brazil, $12(\$0.06) = \$0.72$; Peru, $6(\$0.04) = \$0.24$; France, $12(\$0.06) = \$0.72$; Spain, $13(\$0.05) = \$0.65$. The total is \$2.33 for the 43 stamps and the average price is $\frac{\$2.33}{43} \approx \$0.054 \approx 5.5¢$.

10. **(E)** The '70s stamps cost: Brazil, $12(\$0.06) = \$0.72$; Peru, $6(\$0.04) = \$0.24$; France, $12(\$0.06) = \$0.72$; Spain, $13(\$0.05) = \$0.65$. The total is \$2.33 for the 43 stamps and the average price is $\frac{\$2.33}{43} \approx \$0.054 \approx 5.5¢$.