Bellwork Alg 2B Monday, October 30, 2017

1. The value of an investment in 2009 was $110,000 and was growing 5.2% each year. Find the number of years until the investment is worth $300,000. Round to the nearest hundredth.

2. In a 5-kilometer race, runners recorded times (in minutes:seconds) of 24:04, 22:45, 19:53, and 21:33. What was the difference between the slowest runner and the fastest runner?

A. 2:23 B. 2:45 C. 4:11 D. 4:51 E. 5:38

3. If $a - b$ is a multiple of 7, which of the following must also be a multiple of 7?

A. ab B. $a + b$ C. $\frac{a+b}{2}$ D. $\frac{b-a}{2}$ E. $b - a$

4. Alan, Fred, and Mark are going to buy a computer that costs $540. If Alan pays $40 more than Fred and Fred pays twice as much as Mark, then how much does Mark pay?

A. $100 B. $140 C. $160 D. $200 E. $240

5. A watch loses x minutes every y hours. At this rate how many hours will the watch lose in one week?

A. $7xy$ B. $\frac{2x}{5y}$ C. $\frac{5y}{2x}$ D. $\frac{14y}{5x}$ E. $\frac{14x}{5y}$

ANSWERS

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1. The value of an investment in 2009 was \$110,000 and was growing 5.2% each year. Find the number of years until the investment is worth \$300,000. Round to the nearest hundredth.

$100 + 5.2 = 105.2\%$

$b = 1.052$

$110{,}000(1.052)^x = 300{,}000$

$(1.052)^x = \frac{300{,}000}{110{,}000} = \frac{30}{11}$

$\log_{1.052}\left(\frac{30}{11}\right) = x \qquad x = \frac{\log\left(\frac{30}{11}\right)}{\log 1.052}$

$x = 19.79$ yrs

2. In a 5-kilometer race, runners recorded times (in minutes:seconds) of 24:04, 22:45, 19:53, and 21:33. What was the difference between the slowest runner and the fastest runner?

A. 2:23 B. 2:45 C. 4:11 D. 4:51 E. 5:38

24:04 − 19:53

23:64
−19:53
4:11

3. If $a - b$ is a multiple of 7, which of the following must also be a multiple of 7?

A. ab B. $a+b$ C. $\frac{a+b}{2}$ D. $\frac{b-a}{2}$ E. $b-a$

$a-b$ & $b-a$ are opposites so if $a-b$ is a multiple of 7 so is $b-a$.

4. Alan, Fred, and Mark are going to buy a computer that costs \$540. If Alan pays \$40 more than Fred and Fred pays twice as much as Mark, then how much does Mark pay?

A. \$100 B. \$140 C. \$160 D. \$200 E. \$240

$x =$ \$ Mark paid

Fred $\Rightarrow 2x$

Alan $\Rightarrow 2x + 40$

$x + 2x + 2x + 40 = 540$

$5x + 40 = 540$

$5x = 500$

$x = \$100$

5. A watch loses x minutes every y hours. At this rate how many hours will the watch lose in one week?

A. $7xy$ B. $\frac{2x}{5y}$ C. $\frac{5y}{2x}$ D. $\frac{14y}{5x}$ E. $\frac{14x}{5y}$

$\frac{x \text{ min}}{y \text{ hrs}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{7 \text{ days}}{1 \text{ wk}} = \frac{168x \text{ hr}}{60y \text{ wk}}$ reduce by a factor of 12

$= \frac{14x}{5y}$ hrs/wk