RATIONALE



[4+16]÷5+6	8 times 2 is 16. Next, we add 4 and 16 to complete the operations inside parentheses.
20÷5+6	4 plus 16 is 20. Now there is just division and subtraction. Division comes before subtraction in the Order of Operations, so we divide 20 by 5 next.
4+6	20 divided by 5 is 4. Lastly, add 4 and 6.
10	4 plus 6 is 10.





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304 people

297 people

RATIONALE

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$y = a(1+b)^x$	In general, exponential growth is modeled using this equation. We will use information from the problem to find values to plug into this equation.
y = 40(1+0.5) ⁶	The initial number of infections is $\begin{array}{c}40\\50\%\\$, so this is the value for $\begin{array}{c}50\%\\6\end{array}$, so this is our value for $\begin{array}{c}50\%\\6\end{array}$ (remember to write it as a decimal). We want to know how many infections there will be invected 6, so we will use $\begin{array}{c}6\\6\end{array}$ for the value for $\begin{array}{c}1\\$
y = 46655	plus 0.5 p a glext, take this value to the power of ⁶ .
<i>y</i> = 40(11.391)	$\frac{1.5}{40}$ to the power of $\frac{6}{11.391}$. Finally, multiply this by
y = 456	There will be 456 people infected in week 6.
CONCED	Т

CONCEPT

Exponential Growth

Suppose $\log_a x = 5$, $\log_a y = 3$, and $\log_a z = -1$.

Find the value of the following expression.



How long will it take until the number of infected people reaches 1,400?

28 days

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98 days

49 days **correct**

14 days

RATIONALE

RATION	ALE cale.co.uk
$N = 200\sqrt{t}$	The spread of the disense of thodeled by this equation. To find how long it will take until 1400 people are infected, we will substitute this value for N and solve for t.
1400 = 20 . 1	Once N is repliced, we can solve for t. First, divide both sides by 200 to undo 200 multiplied by the square root of t.
$7 = \sqrt{t}$	On the left, 1400 divided by 200 is 7. To undo the square root of t on the right, square both sides.
49 <i>=t</i>	On the left, 7 squared is 49. It will take 49 days for 1400 people to become infected by the disease.

CONCEPT

Solving Multi-step Equations

11

 1.05×10^{-10} The diameter of a hydrogen atom is about meters. A protein molecule has an overall length of 3000 times (or 3×10^{3}

times) the diameter of a hydrogen atom.

What is the length of the protein molecule, in meters, if it were written in scientific notation?



RATIONALE

diameter of hydrogen atom = 1.05×10^{-10}	To find the length of the protein 1.05×10^{-10}	n molecule,
	multiply by 3000 3×10^3	, which can
	be expressed as .	
(1.05×10 ⁻¹⁰) ⋅ (3×10 ³)	When multiplying numbers in sen notation, you must deal with the and 10s separately. First, multip 3.	cientific e numbers ply 1.05 and

studocu



8 seconds

6 seconds

7 seconds

RATIONALE

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$y = -16t^2 + 4t + 380$	To determine how long it will take for the rock to hit the ground, set the equation equal to zero.
$0 = -16t^2 + 4t + 380$	When a quadratic equation is set equal to zero, t
	you can use the quadratic forminate serve for .
$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	Use the coefficients a be general expression $at^2 + bt$ in the
preview	quadratic orbuna.
$t = \frac{-4 \pm \sqrt{4^2 - 4(-16)(380)}}{2(-16)}$	In this case, $a = -16$, $b = 4$, and $c = 380$. Once
	you have substituted values in for ", ", begin
	to solve for t.
$t = \frac{-4 \pm \sqrt{4^2 - 4(-16)(380)}}{-32}$	We can start with the denominator, since it is $2 - 16$
	easily simplified by multiplying and . Next, simplify the expression underneath the radical in the numerator.
$t = \frac{-4 \pm \sqrt{16 - (-24320)}}{-32}$	4 16 4 - 16 squared equals , and times 380 times equals . Then, find the difference 16 - 24320 between and



With drifting ice: $330 = (r_1 + r_2)(11)$ Against drifting ice: $330 = (r_1 - r_2)(15)$	For the first trip, the distance, d , is 330 miles, the combined rate is $r_1 + r_2$, and the time, t , is hours. On the trip back, the distance, d , is miles, the combined rate is $r_1 - r_2$, and the t 15 time, r_1 is hours. Next, simplify the system of equations by dividing each equation by its respective time.
$30 = r_1 + r_2$ $22 = r_1 - r_2$	In the first equation, divide both sides by 1^{1} , which equals on the left side and leaves $r_1 + r_2$ on the right side. In the second equation, divide both sides by 1^{15} which equals 2^{22} on the left side and leaves 1^{2} on the right side. To solve on the rates, and the two equations.
$30 = r_{1} + 22 = r_{1} - r_{2}$ $52 = 2r_{1}$ $26 = r_{4}$	Adding the two equations together, the constant $30 \ 22 \ 52$ terms on the left side, and sum to 2^{r_1} sum to 2^{r_1} and r_2 is eliminated. To solve for r_1 , divide both sides by 2
20 11	Dividing by equals d. The rate of Todd's snowmobile, is 26 miles per hour.

CONCEPT