

Mia

	4	3	2	1
Problem Solving	<ul style="list-style-type: none"> - An efficient and logical strategy is chosen based on the task - Planning, monitoring, and adjusting of strategy is evident 	<ul style="list-style-type: none"> - A correct strategy is purposefully chosen - Strategy is monitored and adjustments are made as necessary 	<ul style="list-style-type: none"> - A strategy is chosen with some mathematical understanding and purpose - Monitoring and adjusting of strategy is minimal 	<ul style="list-style-type: none"> - A strategy is chosen with little to no mathematical understanding or purpose - Monitoring and adjusting of strategy is not evident - Does not correctly interpret and analyze the task
Reasoning and Proof	<ul style="list-style-type: none"> - Uses effective mathematical reasoning. - Student puts to use the underlying mathematical concepts upon which the task is designed. 	<ul style="list-style-type: none"> - Uses mostly effective mathematical reasoning. - Student addresses most of the mathematical components presented in the task. 	<ul style="list-style-type: none"> - Some evidence of mathematical reasoning. - Student addresses some, but not all the mathematical components presented in the task. 	<ul style="list-style-type: none"> - No evidence of mathematical reasoning. - Student addresses none of the mathematical components of the task.
Organization	<ul style="list-style-type: none"> - Work and thinking is recorded in a neat, logical, and well-organized manner 	<ul style="list-style-type: none"> - Work and thinking is recorded, but could be better or more logically organized 	<ul style="list-style-type: none"> - Work and thinking is recorded, but is not organized neatly or logically 	<ul style="list-style-type: none"> - Work and thinking is not recorded or is recorded in a way that is not easily understood
Communication	<ul style="list-style-type: none"> - Clearly and thoroughly articulates strategy, process and reasoning 	<ul style="list-style-type: none"> - Is mostly able to articulate strategy, process and reasoning 	<ul style="list-style-type: none"> - Articulates some part of strategy, process or reasoning but is vague 	<ul style="list-style-type: none"> - Does not articulate strategy, process, or reasoning
Solution	<ul style="list-style-type: none"> - Correctly solves the problem and verifies the results. 	<ul style="list-style-type: none"> - Solution is incorrect, but process is logical and valid 	<ul style="list-style-type: none"> - Some parts are correct but a correct answer is not achieved 	<ul style="list-style-type: none"> - There were so many errors in mathematical procedures that the problem could not be solved.

This student has a strong understanding of both proportional reasoning and using equations. They were able to correctly identify variables, rates and an equation that worked to arrive at a solution that was correct.

(HIGH)

Name: Yua Hsu

Date: 6-3-16

Work with your group to answer the question using pictures, words, tables, graphs, and/or symbols.

There are two popular stores that sell expensive candles at the mall. Candles R Us sells a candle that will burn for $4x$ hours. Candle-mania sells a candle that will burn for $5y$ hours.



- ❖ After how many hours will one candle be 3 times the size of the other?

20 inches each

$x = 5$ inches per hour

$y = 4$ inches per hour

$$1 - \frac{1}{5}x = 3(1 - \frac{1}{4}x)$$

$$\begin{array}{r} 1 - \frac{1}{5}x = 3 - \frac{3}{4}x \\ + \frac{3}{4}x \quad \quad + \frac{3}{4}x \\ \hline \end{array}$$

$$\begin{array}{r} 1 + \frac{11}{20}x = 3 \\ -1 \quad \quad -1 \\ \hline \end{array}$$

$$\begin{array}{r} \frac{11}{20}x = 2 \\ \times \frac{20}{11} \quad \times \frac{20}{11} \\ \hline \end{array}$$

$$\boxed{x = \frac{40}{11}}$$

$$\boxed{3\frac{7}{11} \text{ hours}}$$

Sathya

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This student was exemplary and considered a high level. This student used pictures and a table to examine the patterns. Then, they used these ideas to create an equation based off of their ratios from the table.

HIGH

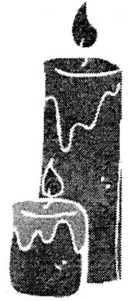
4

Name: Sathya G

Date: 6/3/16

Work with your group to answer the question using pictures, words, tables, graphs, and/or symbols.

There are two popular stores that sell expensive candles at the mall. Candles R Us sells a candle that will burn for 4 hours. Candle-mania sells a candle that will burn for 5 hours.



❖ After how many hours will one candle be 3 times the size of

RS = A
Mania = B

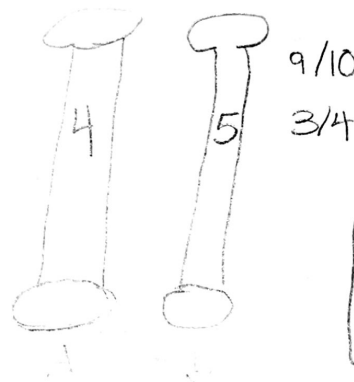
the other?

$$3(4 - x) = 5 - x$$

$$12 - 3x = 5 - x$$

$$7 = 2x$$

$$x = 3.5$$



	Smaller	Bigger	
	4	5	
	3.5	4.5	9/10
	3	4	
	2.5	3.5	
	2	3	
	1.5	2.5	
	1	2	

Whole

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

↑
How long/burned

$$\frac{5}{5} - \frac{2}{5} = \frac{3}{5} \quad \frac{1}{10} \quad \frac{3}{10}$$

$$\frac{5}{5} - \frac{3.5}{5} = \frac{1.5}{5}$$

$$\frac{4}{4} - \frac{3.5}{4} = \frac{0.5}{4}$$

$$\text{Whole} = \frac{4}{4} \text{ or } \frac{5}{5}$$

$$3\left(1 - \frac{x}{4}\right) = 1 - \frac{x}{5}$$

$$3 - \frac{3x}{4} = 1 - \frac{x}{5}$$

$$40 = 11x$$

$$x = \frac{40}{11}$$

$$12 - 3x = 4 - \frac{4x}{5}$$

$$40 = -4x + 15x \quad 8 = \frac{-4x}{5} + 3x$$

$3 \frac{7}{11}$ hrs

Tommy H.

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LOW

with help from other students when going over it

This student arrived at the correct solution after watching some presentations. They recorded some fractions and equations but it was not a complete idea that would help them arrive at a solution. Their strategy was sporadic and it had little meaning to the big picture of the problem.

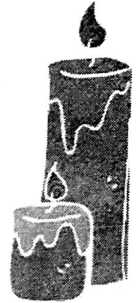
name: _____

Tommy H

Date: _____

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There are two popular stores that sell expensive candles at the mall. Candles R Us sells a candle that will burn for 4 hours. Candle-mania sells a candle that will burn for 5 hours.



❖ After how many hours will one candle be 3 times the size of the other?

$$x = 4h$$

$$y = 5h$$

$$x = 240 \text{ min}$$

$$y = 300 \text{ min}$$

$$1 - \frac{1}{5}x = 3(1 - \frac{1}{4}x)$$

$$1 - \frac{4}{20}x = 3 - \frac{15}{20}x$$

$$1 = 3 - \frac{11}{20}x$$

$$-2 = -\frac{11}{20}x$$

$$\frac{40}{11} = x$$

$$x = \frac{1}{4}$$

$$y = \frac{1}{5}$$

$$20 - \frac{4}{4} = \underline{0}$$

$$20 - \frac{3}{4} = \underline{5}$$

$$20 - \frac{2}{4} = \underline{10}$$

$$20 - \frac{1}{4} = \underline{15}$$

$$1 - \frac{x}{4} = \underline{\hspace{2cm}}$$



4
4
3
4
2
4
1
4

Name

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This student used a pattern and table to see how the rate was affecting the height of the candle. The idea was correct, but the student was not able to connect the idea of process to the big picture in order to solve the problem.

MEDIUM

2

Name: Nate

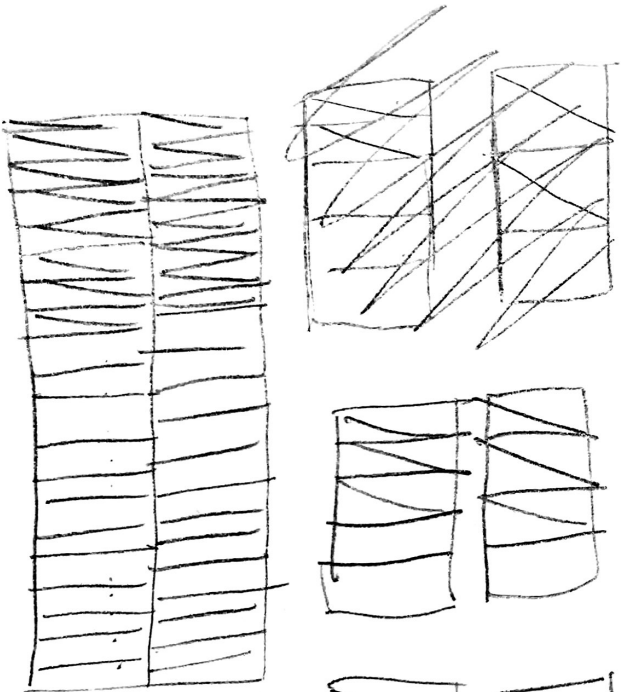
Date: 6/3

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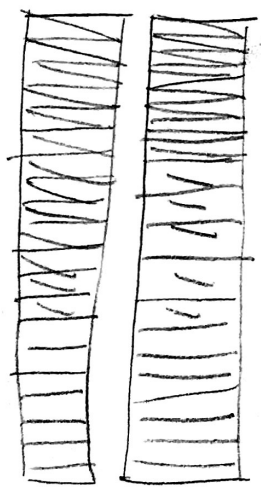
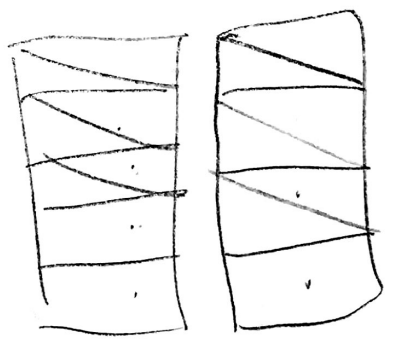
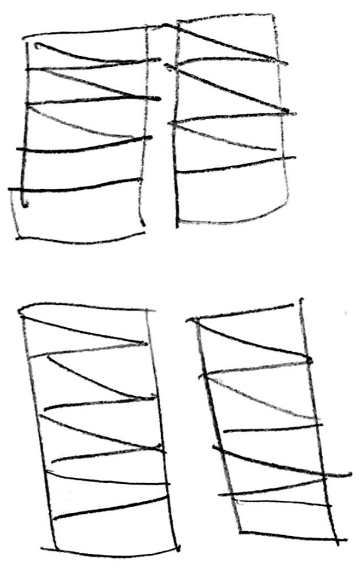
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❖ After how many hours will one candle be 3 times the size of the other?



~~2 hours~~



4x

5y

$$d = rt$$

$$d = r4$$

$$d = r5$$

$$-x \quad y$$

$$d = r + t$$

$$x = \frac{1}{2}$$

$$d = r + 4$$

$$\frac{5}{5} \quad \frac{4}{5} \quad \frac{3}{5} \quad \frac{2}{5} \quad \frac{1}{5} \quad \frac{0}{5}$$

$$d = r + 5$$

$$20 = 4r$$

$$\frac{4}{4} \quad \frac{3}{4} \quad \frac{2}{4} \quad \frac{1}{4} \quad \frac{0}{4} \quad \frac{0}{4}$$

$$20 = 5r$$

$$r = 5$$

$$15x - 4x = 800$$

$$11x = 800$$

$$x = \frac{800}{11}$$

$$\frac{20}{20} \quad \frac{16}{20} \quad \frac{12}{20} \quad \frac{8}{20} \quad \frac{4}{20}$$

$$r = 4$$

$$\frac{20}{20} \quad \frac{15}{20} \quad \frac{10}{20} \quad \frac{5}{20} \quad \frac{0}{20}$$

$$d_1 = r_1 + t_1 \quad x = \frac{40}{11}$$

$$400 - 4x = 1200 - 15x$$

$$400 + 11x = 1200$$

$$\frac{40}{40}$$

$$d_2 = r_2 + t_2$$

$$\frac{3x}{4} - \frac{x}{5} = 40$$

$$11x =$$

$$20 - \frac{x}{5} = 3\left(20 - \frac{x}{4}\right)$$

$$20 - \frac{x}{5} = 60 - \frac{3x}{4} \quad 1 - \frac{x}{5}$$

$$-\frac{x}{5} = 40 - \frac{3x}{4}$$

$$20 - 4x = 60 - 5x$$