| Warmup $9 / 2^{2^{2}}$ <br> Created by Mr. Lischwe Is this a proportional relationship? Explain how you know. |  |  |  |
| :---: | :---: | :---: | :---: |
| 1) Billy is saving money. |  | 2) Linda is painting a wall. |  |
| Weeks | Dollars in Billy's piggy | Minutes | Square feet painted |
|  | bank | 1 | 12 |
| 1 | 8 | 2 | 24 |
| 2 | 14 | 3 | 36 |
| 3 | 20 | 4 | 48 |
| 4 | 26 | 5 | 60 |
| 5 | 32 |  |  |
| 3) Early finishers: try to figure out how the problem in the date works. |  |  |  |

## p. 175 (7, 8, 9, 12, 13)

7) Yes; it is a constant ratio of 3 cents per hour.
8) Yes; there is always $3 / 4$ cup of vinegar for every 3 cups of oil.
9) Yes; each inch is 7.5 miles
10) Sample answer: Josiah reads at a constant rate of 1.5 pages per minute.
11) 

a. No; if it were proportional, and 1 ticket is $\$ 3.50$, then 2 tickets would be $\$ 7.00$. But the tickets only increase by 50 cents each.
b. Yes; each ticket is $\$ 2.50$.


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## Proportional?

| Years | Height of tree |
| :--- | :--- |
| 0 | 0 |
| 1 | 12 |
| 2 | 24 |
| 3 | 40 |
| 4 | 60 |

Constant rate of change

| Years | Height of tree |
| :--- | :--- |
| 4 | 17 |
| 5 | 21 |
| 6 | 25 |
| 7 | 29 |
| 8 | 33 |
| Years | Height of tree |
| 4 | 17 |
| 5 | 20 |
| 6 | 25 |
| 7 | 32 |
| 8 | 34 |


| Years | Height of tree |
| :--- | :--- |
| 4 | 17 |
| 6 | 21 |
| 8 | 25 |
| 10 | 29 |
| 12 | 33 |

The table shows the average temperature ( ${ }^{\circ} \mathrm{F}$ ) for five months in a certain city. Find the rate of change for each time period. During which time period did the temperature increase at the fastest rate?

| Month: | 2 | 4 | 5 | 8 | 9 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Temp <br> $\left({ }^{\circ} \mathbf{F}\right)$ | 54 | 62 | 67 | 76 | 78 |

Is the rate of change constant?

| Month: | 2 | 4 | 5 | 8 | 9 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Temp <br> $\left({ }^{\circ} \mathrm{F}\right)$ | 54 | 62 | 67 | 76 | 78 |



On July 12 ${ }^{\text {th }}$, Gary had $\$ 65$ saved up. By July $17^{\text {th }}$, Gary $\$ 95$ saved up. How many dollars per day did Gary save in this span of time?


- A Nashville Fire Department tanker truck had access to a certain number of gallons of water at a recent fire. After several hours the firefighter realized he did not record the initial amount of water as he was required, but he knew the truck used water at a constant rate. He recorded the following information:

| \# of hours at the <br> scene | 0 | 3 | 5 | 8 | $?$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| \# of gallons <br> remaining | $?$ | 336,000 | 240,000 | 96,000 | 0 |

- How many gallons per hour does the truck use???
- How much water did the truck have originally?
- How long will it take the truck to run out of water?

- How many gallons per hour does the truck use??? -48,000
- How much water did the truck have originally? - 480,000
- How long will it take the truck to run out of water? - 2 more hours (by hour 10)

Anne was reading a book. She wrote down what page she was on at various times:

| Time | Page |
| :--- | :--- |
| $1: 45$ | 0 |
| $1: 50$ | 15 |
| $2: 00$ | 45 |
| $2: 03$ | 54 |
| $2: 19$ | 102 |

- Was she reading at a constant rate?
- If so, what is the rate?
- If not, when was she reading faster or slower?


## COPY:

Rate of Change $=\underline{\text { change in } y}$ (output) change in $x$ (input)

- Anne was reading a book. She wrote down what page she was on at various times:

| Time | Page |
| :--- | :--- |
| $1: 45$ | 0 |
| $1: 50$ | 15 |
| $2: 00$ | 45 |
| $2: 03$ | 54 |
| $2: 19$ | 102 |

-Was she reading at a constant rate? Yes

- If so, what is the rate? 3 pages per minute
- If not, when was she reading faster or slower?



Yes, rate of change is not constant. It is 2.


The table shows the number of bikes made by a company for certain years. Find the rate of change for each time period. During which time period did the number of bikes increase at the fastest rate?

| Year | 1 | 2 | 5 | 7 | 11 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Bikes | 32 | 35 | 47 | 47 | 61 |

1 to $2: 3 ; 2$ to $5: 4 ; 5$ to $7: 0 ; 7$ to 11:3.5;
from years 2 to 5

Homework
-p. $175(1-6,10)$

-     + 30 Minutes of ALEKS

