# Rate Word Problems

1.  Emily paints at a constant rate.  She can paint 32 square feet in 5 minutes.  What area, $A$, in square feet, can she paint in $t$ minutes?
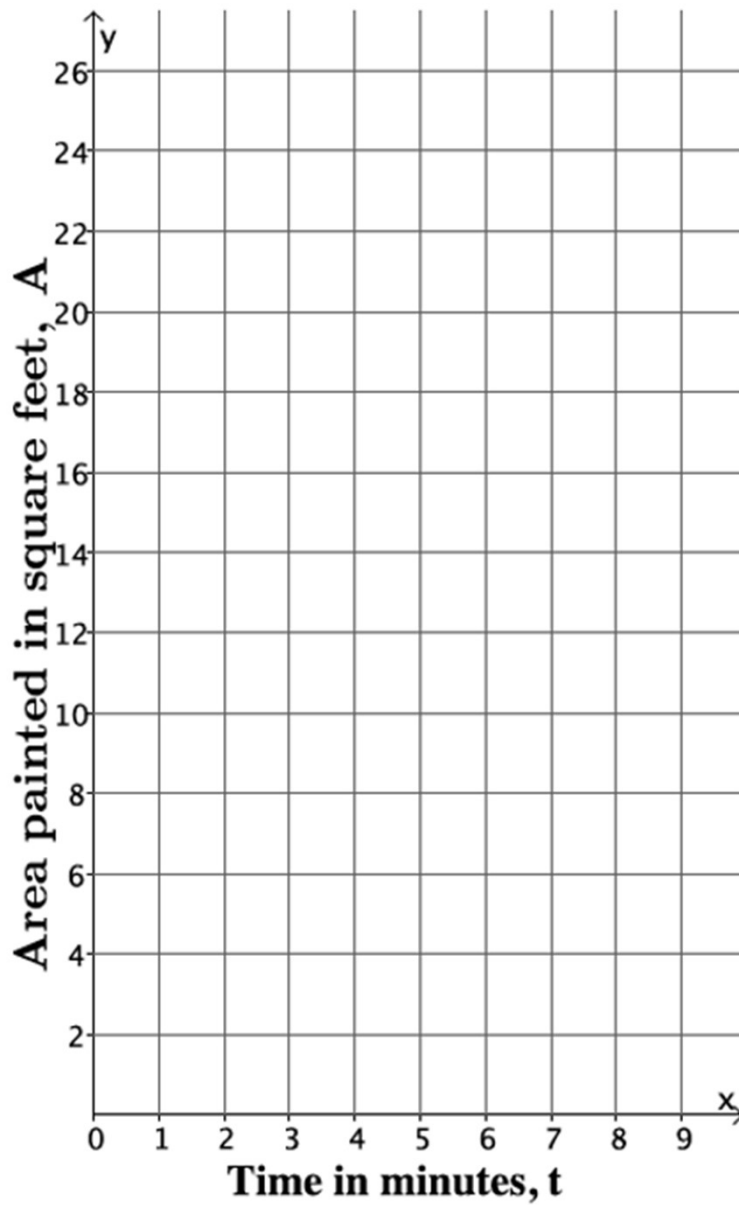
a)  Write the linear equation in two variables that represents the number of square feet Emily can paint in any given time interval.

b)  Complete the table below.  Use a calculator, and round answers to the tenths place.

| $t$ (time in minutes) | Linear Equation: | $p$ (pages typed) |
|:---:|:---:|:---:|
| 0 | | |
| 5 | | |
| 10 | | |
| 15 | | |
| 20 | | |

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c) Graph the data on a coordinate plane.



d) About how many square feet can Emily paint in $2\frac{1}{2}$ minutes?  Explain.

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1. Emily paints at a constant rate.  She can paint 32 square feet in 5 minutes.  What area, $A$, in square feet, can she paint in $t$ minutes?

a)  Write the linear equation in two variables that represents the number of square feet Emily can paint in any given time interval.

Let $C$ be the constant rate that Emily paints in square feet per minute.  Then,

$\frac{32}{5} = C$, and $\frac{A}{t} = C$; therefore, $\frac{32}{5} = \frac{A}{t}$.

$$\frac{32}{5} = \frac{A}{t}$$

$$5A = 32t$$
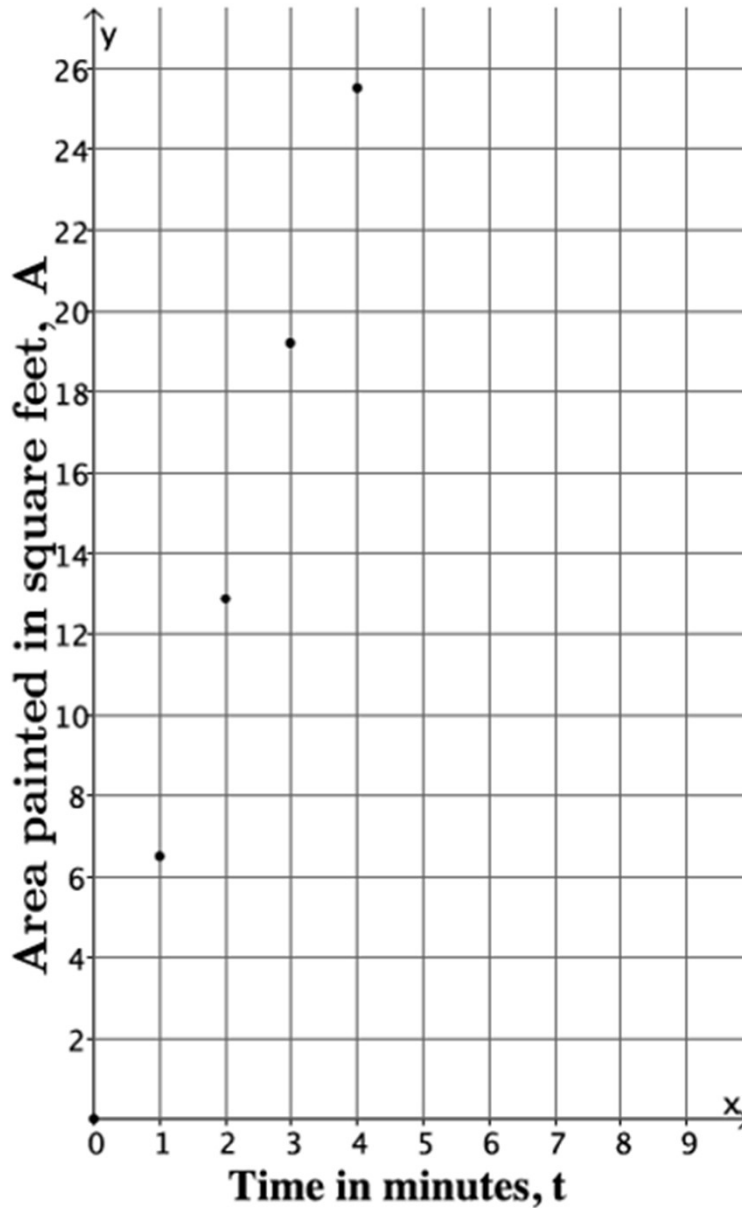
$$\frac{5}{5}A = \frac{32}{5}t$$

$$A = \frac{32}{5}t$$

b)  Complete the table below.  Use a calculator, and round answers to the tenths place.

| $t$ (time in minutes) | Linear Equation: $A = \dfrac{32}{5}t$ | $A$ (area painted in square feet) |
|:---:|:---:|:---:|
| 0 | $A = \dfrac{32}{5}(0)$ | 0 |
| 1 | $A = \dfrac{32}{5}(1)$ | $\dfrac{32}{5} = 6.4$ |
| 2 | $A = \dfrac{32}{5}(2)$ | $\dfrac{64}{5} = 12.8$ |
| 3 | $A = \dfrac{32}{5}(3)$ | $\dfrac{96}{5} = 19.2$ |
| 4 | $A = \dfrac{32}{5}(4)$ | $\dfrac{128}{5} = 25.6$ |

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c) Graph the data on a coordinate plane.



d) About how many square feet can Emily paint in $2\frac{1}{2}$ minutes?  Explain.

Emily can paint between $12.8$ and $19.2$ square feet in $2\frac{1}{2}$ minutes.  After $2$ minutes, she paints $12.8$ square feet, and after $3$ minutes, she will have painted $19.2$ square feet.