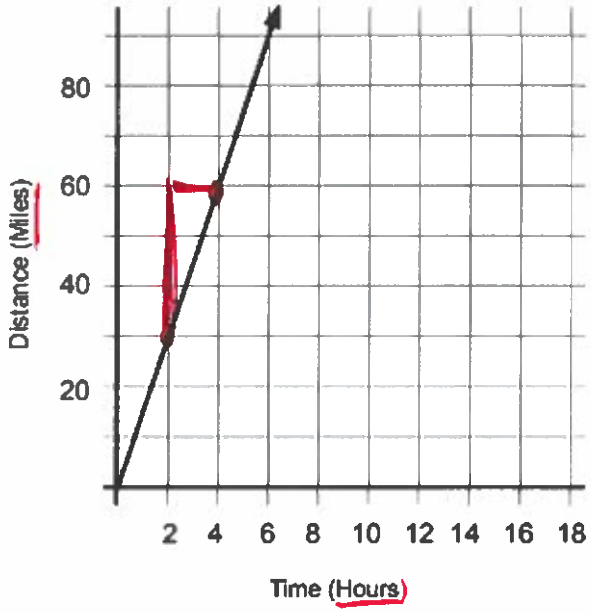
Proportional Relationships

1. Three trains leave their stations at the same time. The graph below shows Train A.



a. What is the slope of the graph?

$\frac{30}{2} = \frac{15}{1}$

b. What does that slope represent in the context of this situation?

15 mph

c. The equation y = 45x shows the relationship between time and distance for Train B, where x represents hours and y represents miles. Find the slope m.

$m = 45 \rightarrow 45$ mph

d. The times and distances for Train C are shown in the table below. What is the speed of Train C?

Train C

Time (hours)	Distance (miles)
3	105
6	210
9	315
12	420

3 → 105, 3 → 105, 3 → 105

$\frac{105}{3} = \frac{35}{1}$

35 mph

e. Which train was moving the fastest? How do you know?

Train B

Proportional Relationships

2. A pound of fudge costs three different prices at three different candy stores. The representations below show the cost, y, based on the number of pounds of candy, x, at the three stores.

Store 1 is given by the equation $y = 16x$ where x represents the pounds of candy and y represents the total cost.

Store 2 is given in the table.

Pounds of Candy	Price
2	21
5	52.5
8	84

3 ( ) 31.5

3 ( ) 31.5

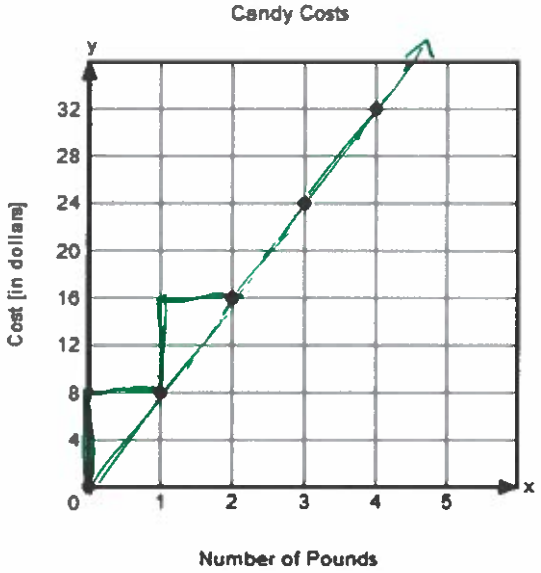
Store 1: $\frac{16}{1}$

$16 per lb

Store 2: $\frac{\$31.5}{3}$

$= \$10.50$ per lb.

Store 3 is given by the graph



Store 3: $\frac{8}{1}$

$8 per lb.

a. Create an equation for store 2 and store 3.

2: $y = 10.5x$ 3: $y = 8x$

b. What is the rate of change for each situation and what does it mean?

↓ Slope $ per pound.

c. If you bought 7 pounds of candy, what would it cost at each store?

(1.) $16 \cdot 7 = \$112$ (2.) $10.5 \cdot 7 = \$73.50$ (3.) $8 \cdot 7 = \$56$