

## 11/3 Proportional Reasoning

Ratio - relationship between amounts

comparison ← apples to oranges  
boys to girls  
dogs to cats  
↓  
quantity

look like

2 : 4

2 to 4

$\frac{2}{4}$

(ratio)

- 1) sets → (comparison - unrelated stuff)
- 2) rates → compare related ideas (things)  
speed = miles per hour

↓  
(linear)  
distance      time

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$S = \frac{15 \text{ ft}}{8 \text{ min}}$$

unit rate

$$\frac{15 \text{ ft}}{2 \text{ min}}$$

30 miles in 60 min.

Rate  
unit rate

30 miles in 1 hr

400 miles in 10 hrs = Rate  
40 miles in 1 hr = UNIT Rate

- 3) fractions → part to whole

1 of 2  
 $\frac{1}{2}$

3 of 4  
 $\frac{3}{4}$

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4 apples to 7 oranges

8 apples to 14 oranges

2 apples to  $3\frac{1}{2}$  oranges  
3.5

1 apple to  $1\frac{3}{4}$  oranges  
1.75

12 apples to 21 oranges

$$\frac{4 \text{ a}}{7 \text{ o}} \begin{matrix} \nearrow \\ \searrow \end{matrix} \frac{12 \text{ a}}{x \text{ o?}}$$

CROSS  
multiplication

proportion  $\rightarrow$  equal ratios

$$\frac{4}{7} = \frac{12}{21}$$

$$\frac{4x}{4} = \frac{84}{4}$$

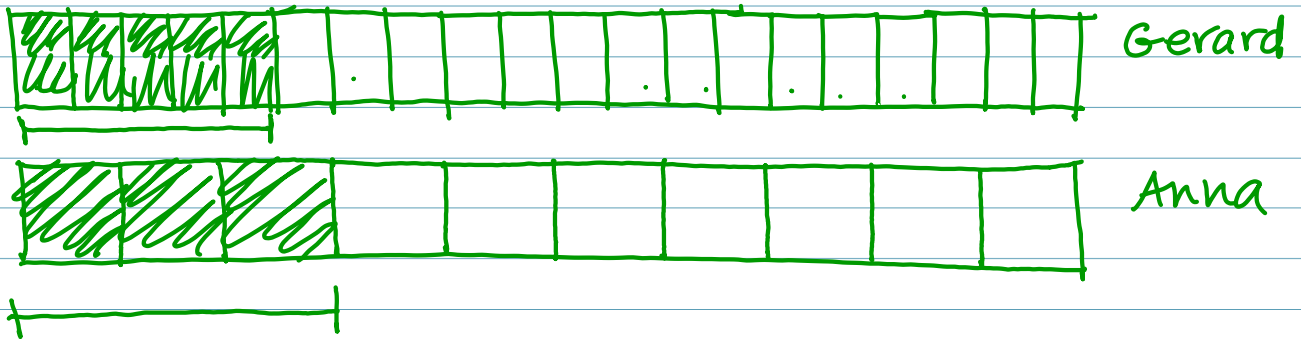
$$x = 21$$

u

# TASK #1

Anna - took 10 shots; made 3  
100 shots; made 30 = 30%  
hit rate

Gerard - took 20 shots; made 5  
100 shots; made 25 = 25%  
hit rate



$$\begin{array}{cc} \frac{5}{20} & \frac{3}{10} \\ \textcircled{G} & \textcircled{A} \\ 25\% & 30\% \end{array}$$

$$\begin{array}{l} \frac{5}{20} = \frac{5}{20} \\ \frac{3}{10} = \frac{6}{20} \end{array} \quad \left. \vphantom{\begin{array}{l} \frac{5}{20} \\ \frac{3}{10} \end{array}} \right\} \begin{array}{l} \text{same} \\ \text{denominator} \end{array}$$