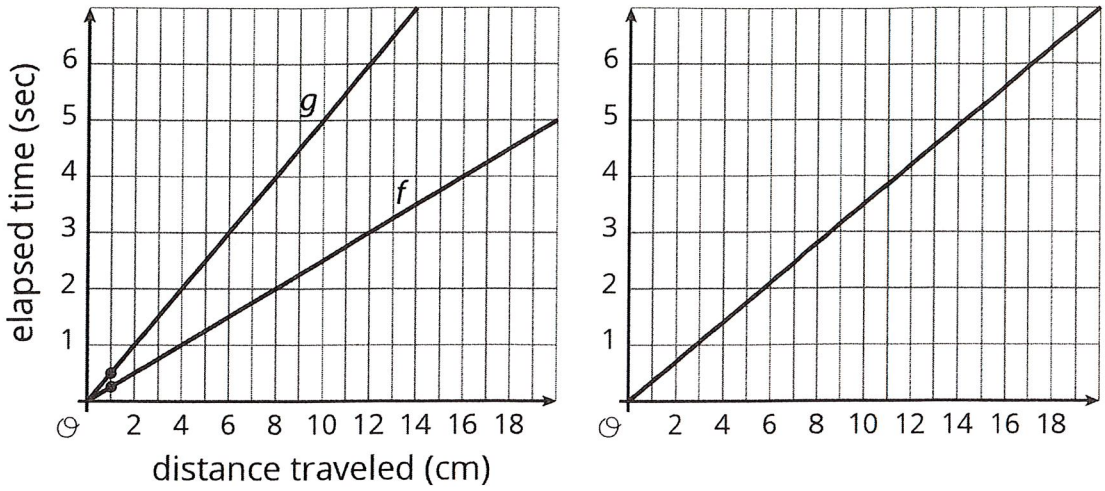
Unit 3

Lesson 1: Understanding Proportional Relationships

Let's study some graphs.

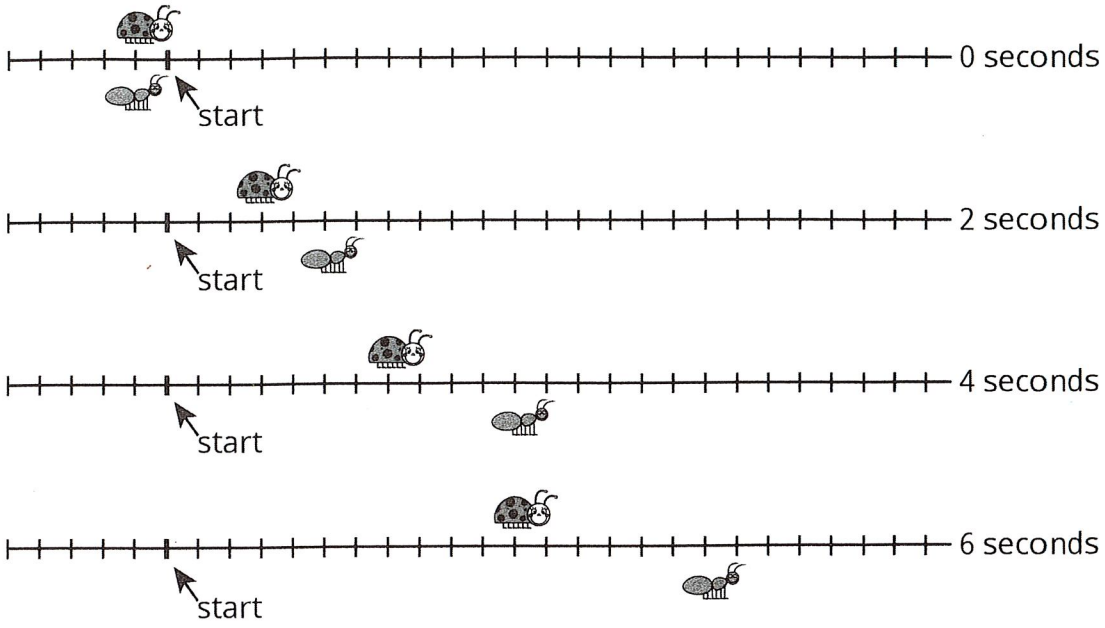
1.1: Notice and Wonder: Two Graphs

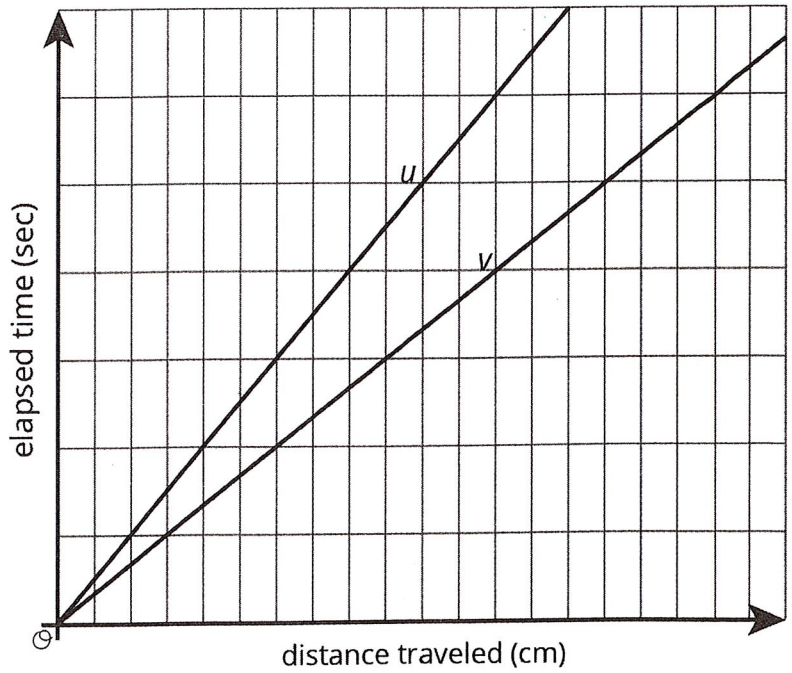


What do you notice? What do you wonder?

1.2: Moving Through Representations

A ladybug and ant move at constant speeds. The diagrams with tick marks show their positions at different times. Each tick mark represents 1 centimeter.





1. Lines u and v also show the positions of the two bugs. Which line shows the ladybug's movement? Which line shows the ant's movement? Explain your reasoning.

2. How long does it take the ladybug to travel 12 cm? The ant?

3. Scale the vertical and horizontal axes by labeling each grid line with a number. You will need to use the time and distance information shown in the tick-mark diagrams.

4. Mark and label the point on line u and the point on line v that represent the time and position of each bug after travelling 1 cm.

Are you ready for more?

1. How fast is each bug traveling?

2. Will there ever be a time when the purple bug (ant) is twice as far away from the start as the red bug (ladybug)? Explain or show your reasoning.

1.3: Moving Twice as Fast

Refer to the tick-mark diagrams and graph in the earlier activity when needed.

1. Imagine a bug that is moving twice as fast as the ladybug. On each tick-mark diagram, mark the position of this bug.

2. Plot this bug's positions on the coordinate axes with lines u and v, and connect them with a line.

3. Write an equation for each of the three lines.