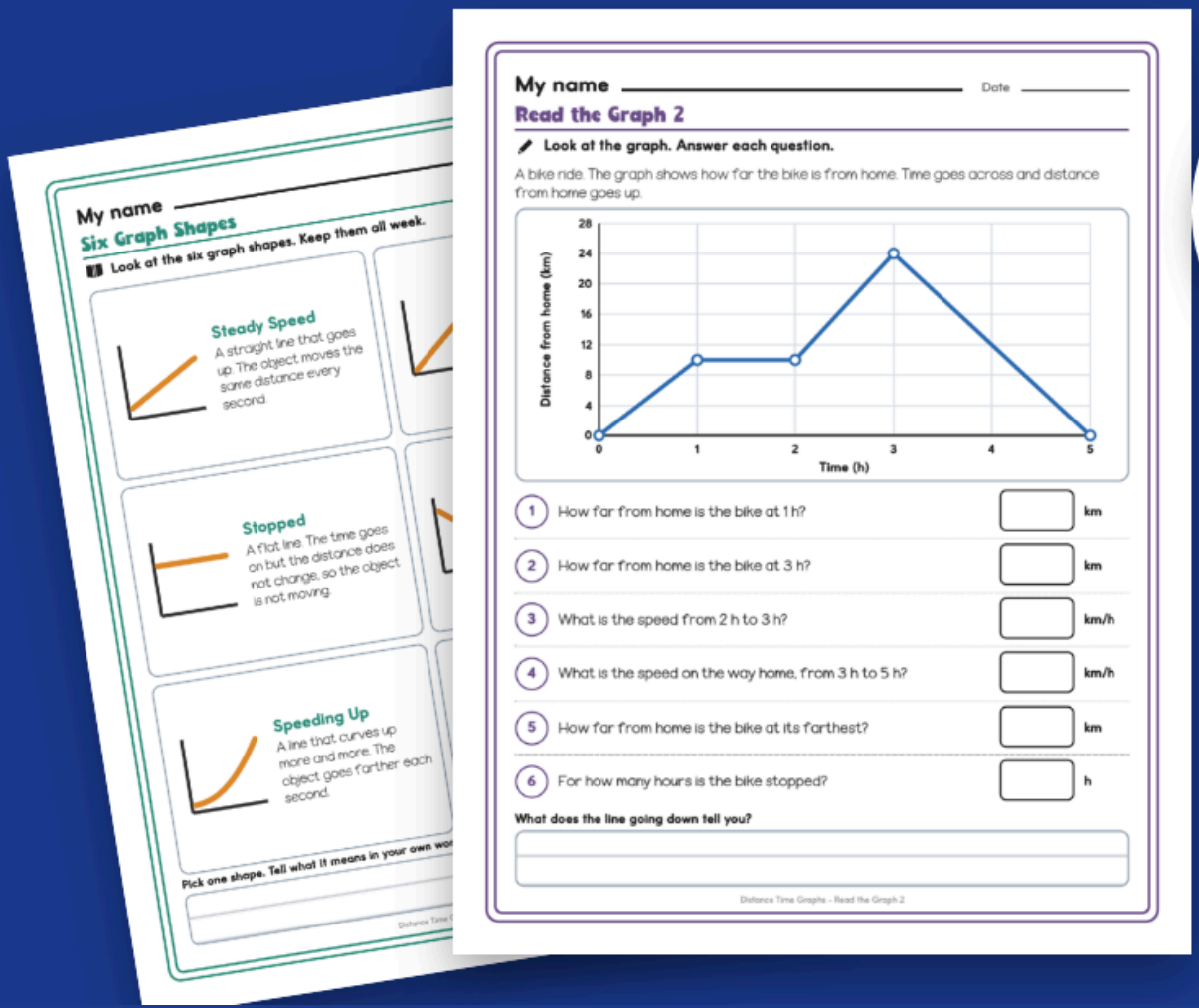
DISTANCE TIME GRAPHS

WORKSHEETS
GRADES 6-8



18 STUDENT PAGES

Bright Path Sped

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PREVIEW

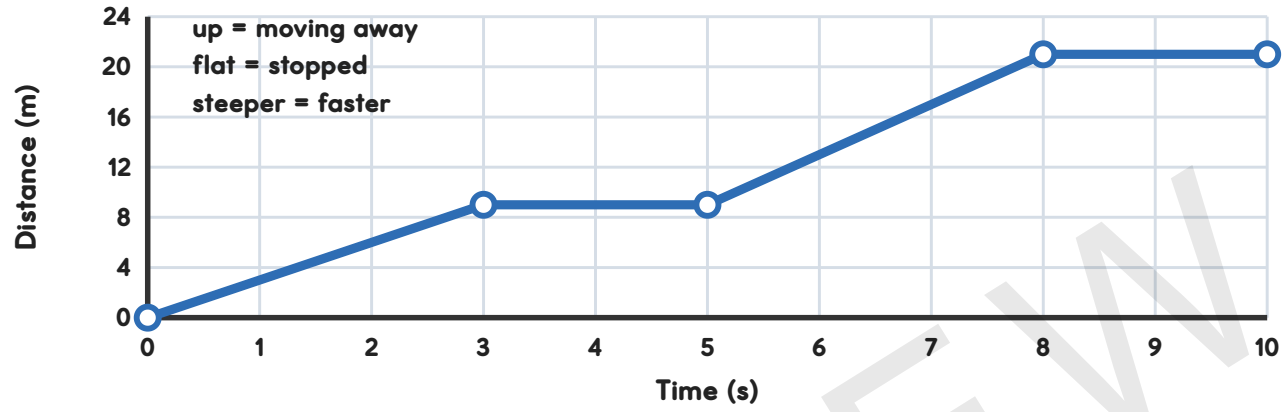
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My name _____ Date _____

Guided Notes

Fill in each blank. Use the word bank.

A distance-time graph shows how far an object has gone as time goes by. Time goes across. Distance goes up.



Fill in each blank. Use the word bank. Two words are not used.

time	moving	not	faster	back

distance	fast	speeding	slower	mass

1. The line on a distance-time graph shows how the distance changes as _____ goes by.
2. A line that goes up means the object is _____ away from the start.
3. A flat line means the object is _____ moving.
4. A steeper line means a _____ speed.
5. A line that goes down means the object is coming _____ to the start.
6. To find the speed, divide the change in _____ by the change in time.
7. Speed tells how _____ the object goes.
8. A line that curves up more and more means the object is _____ up.

PREVIEW

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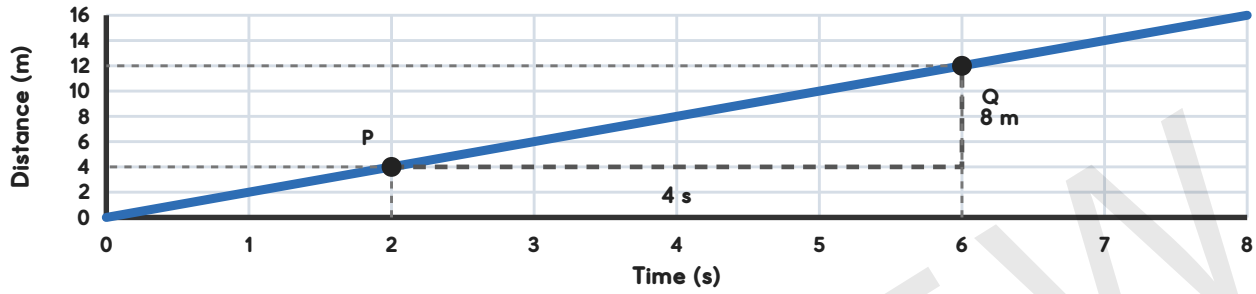
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Worked Example: Speed from Slope

Read the example. Then try one.

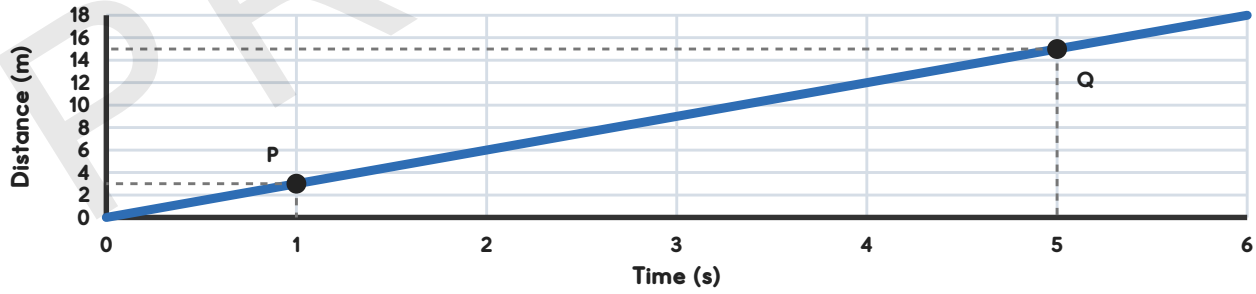
The speed is the slope. Pick two points. Find how much the distance changed and how much the time changed. Then divide.

Example. The numbers are made up for practice.



Start	Pick two points on the line. P is (2 s, 4 m) and Q is (6 s, 12 m).
Step 1	Find the change in distance. 12 - 4 = 8 m
Step 2	Find the change in time. 6 - 2 = 4 s
Step 3	Divide. That is the speed. 8 / 4 = 2 m/s

Your turn. Do the same steps.



Start	P is (1 s, 3 m) and Q is (5 s, 15 m).	
Step 1	Find the change in distance.	m
Step 2	Find the change in time.	s
Step 3	Divide. That is the speed.	m/s

PREVIEW

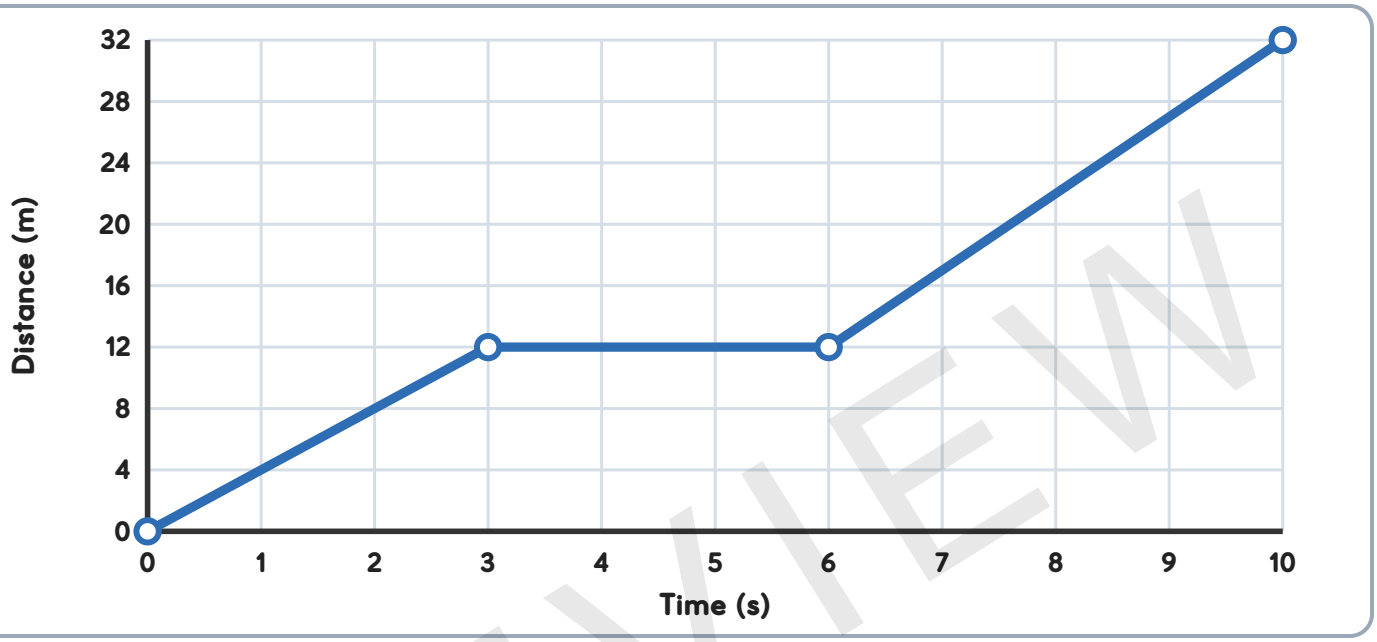
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My name _____ Date _____

Read the Graph 1

Look at the graph. Answer each question.

A toy car rolls. Time goes across the bottom and distance goes up the side. Each dot is a place where the line changes.



1. How far has the car gone at 3 s? _____ m
2. For how many seconds is the car stopped? _____ s
3. What is the speed from 0 s to 3 s? _____ m/s
4. What is the speed from 6 s to 10 s? _____ m/s
5. How far did the car go in all 10 s? _____ m
6. Which part is fastest: the first, the middle or the last? _____

How can you tell when the car stopped?

PREVIEW

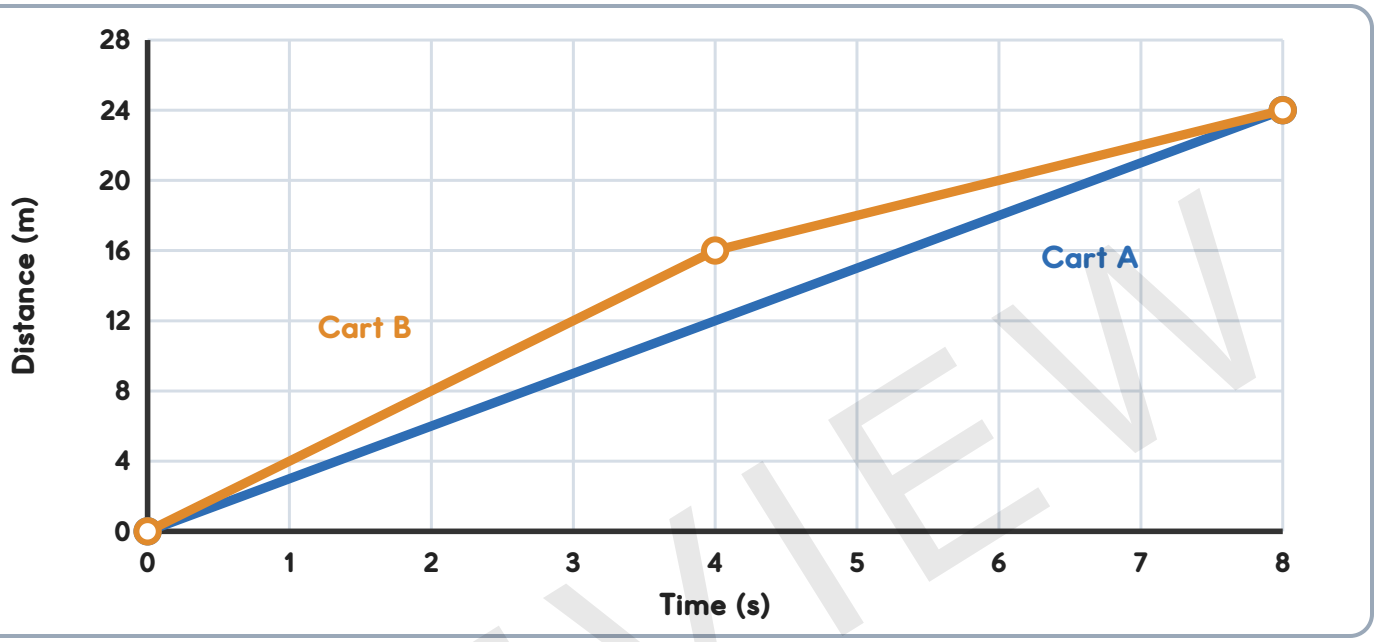
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Compare Two Lines

Look at the two lines. Answer each question.

Cart A and Cart B start at the same place at the same time. Each dot is a place where the line was read.



1. Which cart is ahead at 4 s, A or B? _____

2. How many meters ahead is it at 4 s? _____ m

3. What is the speed of Cart A? _____ m/s

4. What is Cart B's speed from 0 s to 4 s? _____ m/s

5. What is Cart B's speed from 4 s to 8 s? _____ m/s

6. At what time are the carts side by side again? _____ s

How can you tell who is faster just by looking at the lines?

PREVIEW

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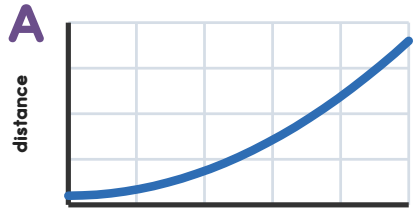
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Match Story to Graph 2

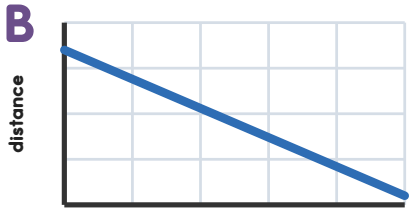
Read each story. Write the letter of its graph.

All six graphs use the same grid. The stories are made up.

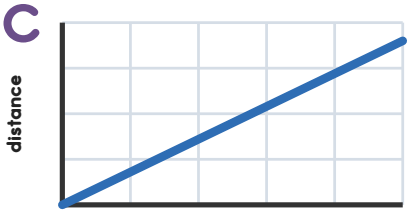
A



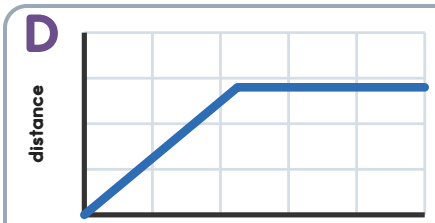
B



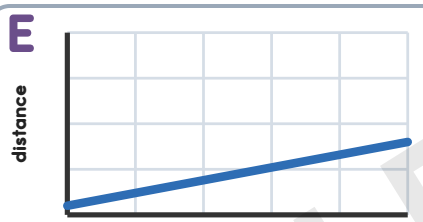
C



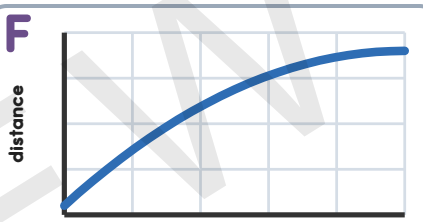
D



E



F



1. A scooter rider goes fast and never changes speed. ☐
2. A walker strolls at a slow, steady speed. ☐
3. A cart starts slowly and keeps speeding up. ☐
4. A runner starts fast, then slows down but keeps going. ☐
5. A toy car drives away, then stops and stays still. ☐
6. A ball starts far from the wall and rolls toward it at a steady speed. ☐

Pick one story. Tell how you chose its graph.

PREVIEW

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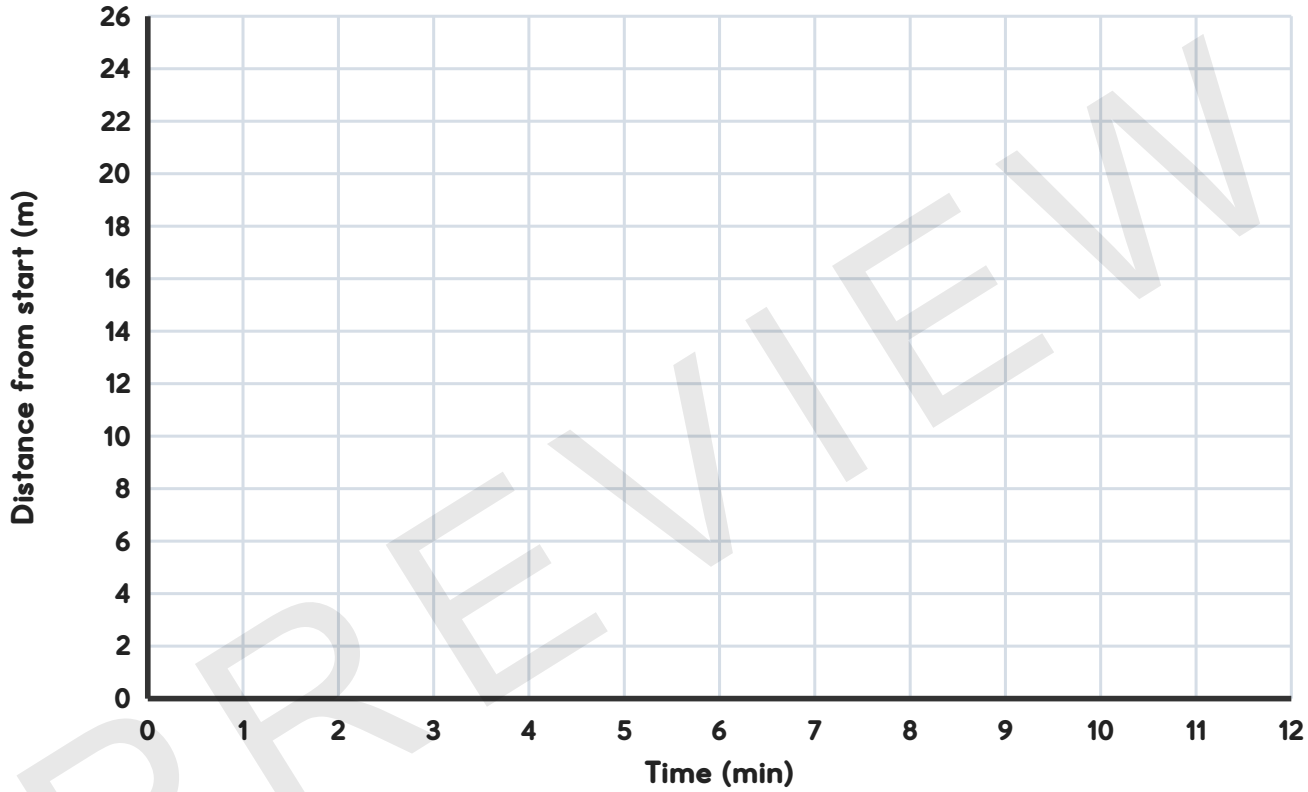
My name _____ Date _____

Draw the Graph 2

Make a dot for each pair. Draw the line.

A toy train rolls out, waits, then rolls part of the way back. Make a dot for each pair, then join the dots with a ruler.

Time (min)	0	2	4	6	8	10	12
Distance (m)	0	12	24	24	18	12	6



PREVIEW

1. For how many minutes is the train stopped? _____ min

2. What is the speed in the first 4 minutes? _____ m/min

3. What is the speed on the way back, from 6 to 12 minutes? _____ m/min

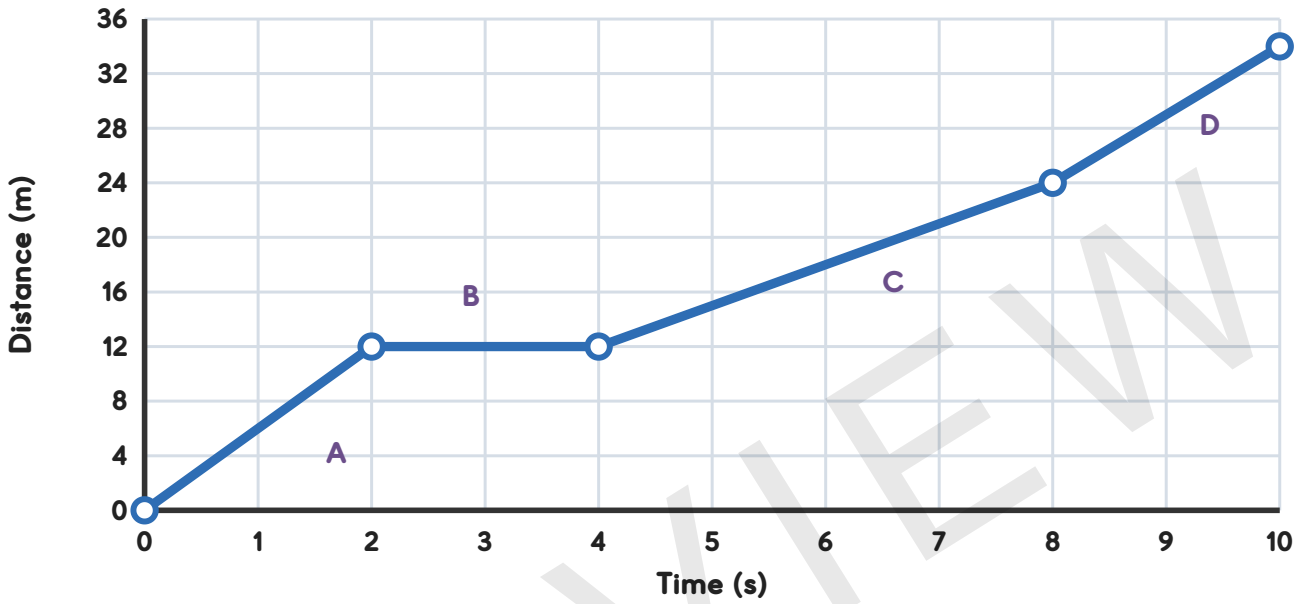
4. How far from the start is the train at 12 minutes? _____ m

My name _____ Date _____

Speed of Each Part

Find the speed of each part of the line.

The line has four parts, A, B, C and D. Find the speed of each part. Divide the change in distance by the change in time.



Part	Time change (s)	Distance change (m)	Speed (m/s)
A 0 s to 2 s			
B 2 s to 4 s			
C 4 s to 8 s			
D 8 s to 10 s			

1. Which part is the fastest? Write its time, like 0 s to 2 s. _____

2. What is the average speed for the whole 10 s? Divide the total distance by 10. _____ m/s

PREVIEW

Preview · Bright Path Sped

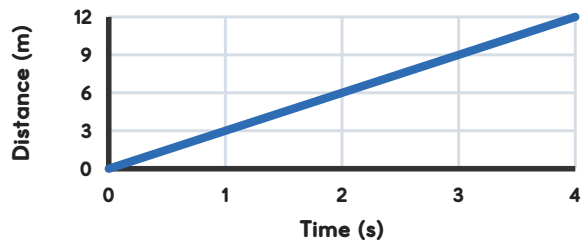
My name _____ Date _____

Find the Mistake

Find the mistake. Then fix it.

Sam is made up for practice. Each sentence has one mistake.

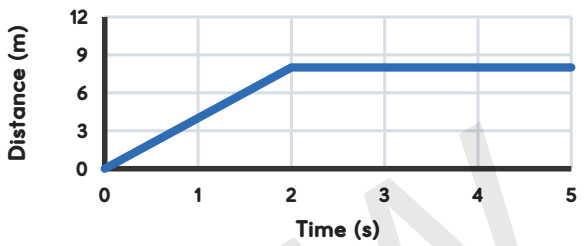
1 **Sam wrote:**



"The line goes up 12 m in 4 s, so the speed is 4 / 12 = 0.33 m/s."

What is wrong? Write it the right way.

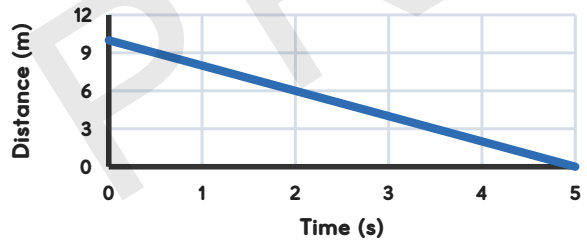
2 **Sam wrote:**



"The line is flat from 2 s to 5 s, so the object is moving at a slow, steady speed."

What is wrong? Write it the right way.

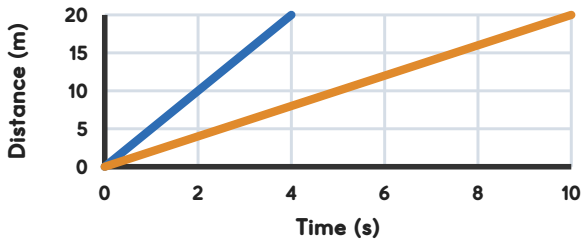
3 **Sam wrote:**



"The line goes down, so the object is slowing down."

What is wrong? Write it the right way.

4 **Sam wrote:**



"Both lines end at 20 m, so both objects have the same speed."

What is wrong? Write it the right way.

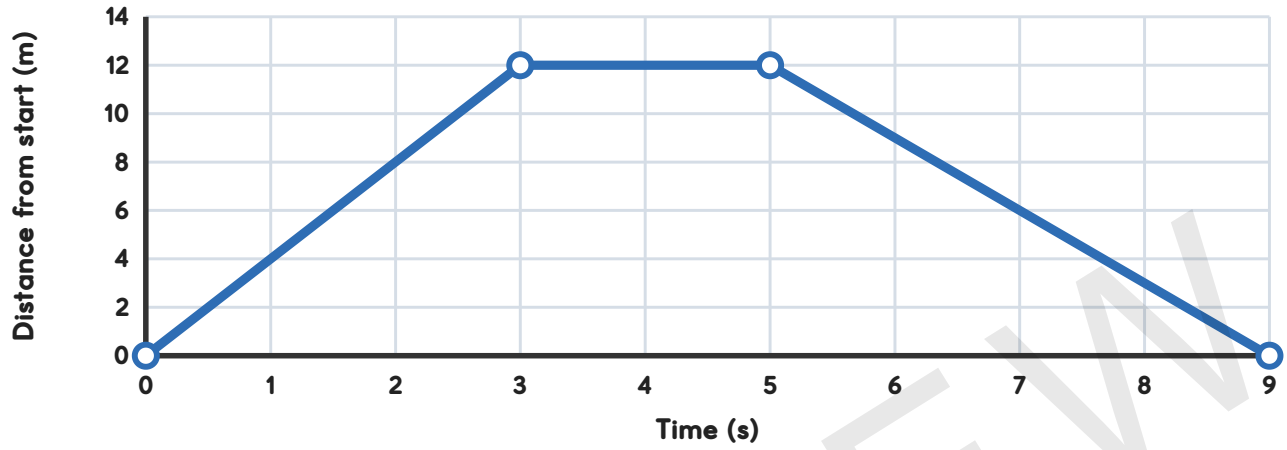
PREVIEW

My name _____ Date _____

Short Answers

Answer each question in sentences.

Use what you know about lines on a distance-time graph. Write in sentences.



1 Write the story of the graph above. Tell what the object does, one part at a time.

2 How can you tell a fast object from a slow object on a distance-time graph? Use the word steeper.

3 Why is the line flat when an object stops? Use the words distance and time.

PREVIEW

My name _____ Date _____

Cut and Paste 2: Graph Shapes

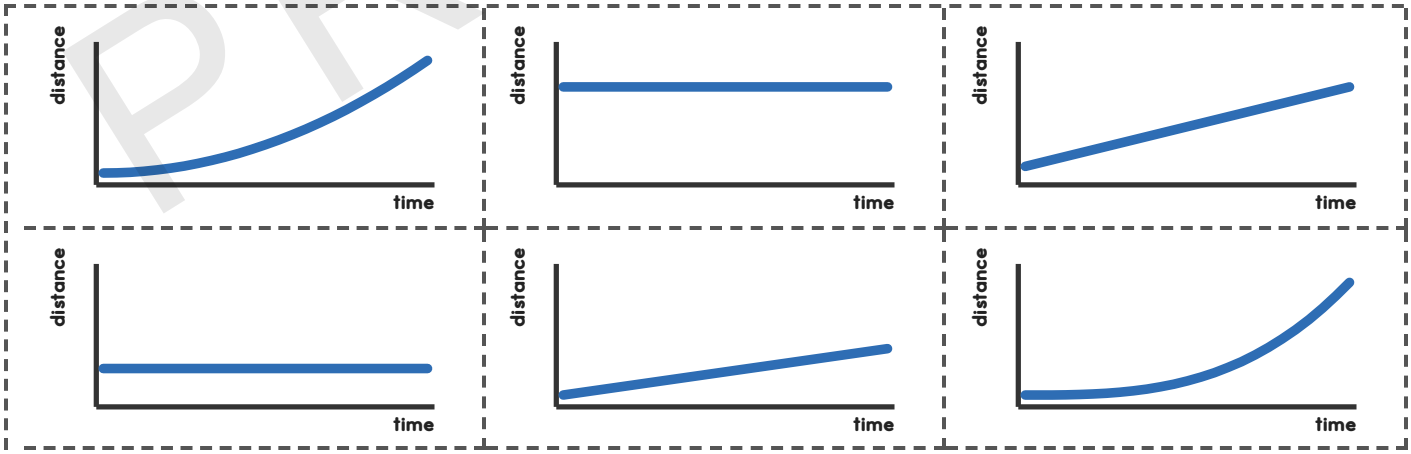
Cut out the six pieces. Paste each one in the right box.

Look at each line. Is it a steady speed, speeding up or stopped?

Steady speed	Speeding up	Stopped

PREVIEW

Cut on the dashed lines: six pieces, one cut across and two cuts down.



How can you tell speeding up from a steady speed?

Answer Key: Matching, Drawing Graphs

Each letter is the graph that fits the story. The graph letters are printed on the page.

Match Story to Graph 1 page 10

Item	Story	Graph
10.1	Nina walks away from home at a steady speed.	C
10.2	A bus drives, waits at a stop, then drives on.	A
10.3	A parked car stays in the same spot all day.	D
10.4	A cart rolls away from the wall, then rolls back to it.	B

Match Story to Graph 2 page 11

Item	Story	Graph
11.1	A scooter rider goes fast and never changes speed.	C
11.2	A walker strolls at a slow, steady speed.	E
11.3	A cart starts slowly and keeps speeding up.	A
11.4	A runner starts fast, then slows down but keeps going.	F
11.5	A toy car drives away, then stops and stays still.	D
11.6	A ball starts far from the wall and rolls toward it at a steady speed.	B

Draw the Graph 1 page 12

Item	Question	Answer
12.1	How far has the cart gone at 5 s? Read your line.	15 m
12.2	What is the speed? Divide the distance by the time: 30 / 10.	3 m/s
12.3	How many seconds does it take to go 21 m? Read your line.	7 s

Draw the Graph 2 page 13

Item	Question	Answer
13.1	For how many minutes is the train stopped?	2 min
13.2	What is the speed in the first 4 minutes?	6 m/min
13.3	What is the speed on the way back, from 6 to 12 minutes?	3 m/min
13.4	How far from the start is the train at 12 minutes?	6 m

What the first plotted line looks like

The points are (0 s, 0 m), (2 s, 6 m), (4 s, 12 m), (6 s, 18 m), (8 s, 24 m), (10 s, 30 m). They fall on one straight line that starts at (0, 0) and rises 3 m for every 1 s. Accept any straight line through the points.

What the second plotted line looks like

The points are (0 min, 0 m), (2 min, 12 m), (4 min, 24 m), (6 min, 24 m), (8 min, 18 m), (10 min, 12 m), (12 min, 6 m). The line rises to 24 m at 4 min, stays flat from 4 to 6 min, then falls to 6 m at 12 min. Accept a line made of straight pieces through the points.

PREVIEW

Answer Key: Mistakes, Writing, Sorts

Pieces are named by their row and column in the cutting grid, left to right and top to bottom.

Find the Mistake page 17

Item	What went wrong	Right answer
17.1	Sam divided time by distance. Speed is distance divided by time.	speed = 12 / 4 = 3 m/s.
17.2	A flat line means the distance is not changing, so the object is not moving.	From 2 s to 5 s the object is not moving.
17.3	A line that goes down means the object is coming back toward the start. Slowing down is a line that gets flatter.	The object is coming back toward the start.
17.4	Both go 20 m, but the blue line takes 4 s and the orange line takes 10 s. The steeper blue line is faster.	Blue: 5 m/s. Orange: 2 m/s. Blue is faster.

Short answers: what to look for page 19

Item	Look for
19.1	Moves away from the start at 4 m/s for 3 s, stops from 3 s to 5 s, then comes back to the start in 4 s at 3 m/s.
19.2	The steeper line is the faster object, because it goes more distance in the same time.
19.3	Time keeps going, but the distance does not change, so the line stays level.

Cut and Paste 1: Story to Line page 20

Piece (row, column)	Box
r1 c1: A cart rolls away from the wall at a steady speed	Line goes up
r1 c2: A parked bike stays in the same spot	Line is flat
r1 c3: A ball rolls back toward the wall	Line goes down
r2 c1: A car waits at a red light	Line is flat
r2 c2: A scooter rider gets farther from home each second	Line goes up
r2 c3: A cyclist rides back toward home	Line goes down

Cut and Paste 2: Graph Shapes page 21

Piece (row, column)	Box
r1 c1: a graph with a line that curves up	Speeding up
r1 c2: a graph with a flat line	Stopped
r1 c3: a graph with a straight line going up	Steady speed
r2 c1: a graph with a flat line	Stopped
r2 c2: a graph with a straight line going up	Steady speed
r2 c3: a graph with a line that curves up	Speeding up

Short answers

Accept any answer that uses a fact from the cards. The key says what to look for, not one right sentence.

PREVIEW

Class Progress Grid

Every student on one grid: items right by kind of sheet.

Class or group _____ Month _____

Student	Notes (of 8)	Reading graphs (of 18)	Matching (of 10)	Drawing and slope (of 17)	Word problems (of 6)	Checks (of 12)	Sorts (of 12)

PREVIEW

How to fill this in

For each column, add up how many items that student has right with no prompt (the tracker rows). One glance across a row shows which skill is easiest and which is next.

Grouping for small-group time

Students low in Reading graphs need the notes and shapes (pages 4 to 6) again. Students low in Drawing and slope need the worked example (page 5) before more lines. Students near full marks can move on to the mistakes and short answers (pages 17 and 19).

Graphs at Home

Dear family, this week we are learning to read and draw distance-time graphs. These questions are for talking, not for a grade. Short answers are fine.

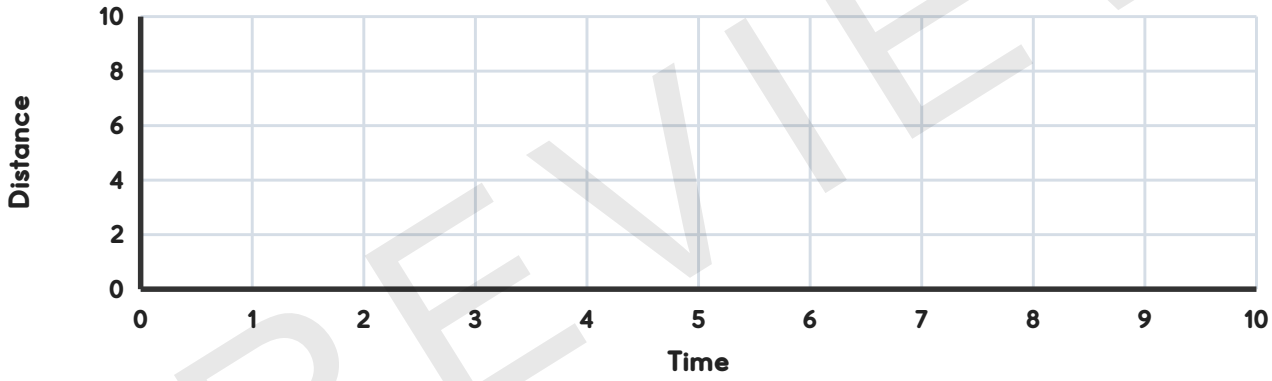
Student _____ Week of _____

Three things to talk about

- Next time you ride in a car, ask: if we made a distance-time graph of this trip, where would the line be flat? (When the car is stopped.)
- Ask: a friend walks 12 meters in 4 seconds. How fast is that? (12 / 4 = 3 meters each second.)
- Ask: if a line on a graph goes down, is the object moving away or coming back? (Coming back toward the start.)

Draw a walk

Make a graph of a walk to the mailbox and back. Time goes across. Distance goes up. A flat line is a stop.



My words from home

Something that stops _____

Something that goes fast _____

A word I still need _____

Note from the teacher

Note from home

PREVIEW