

5.3 Interpreting and Sketching Graphs

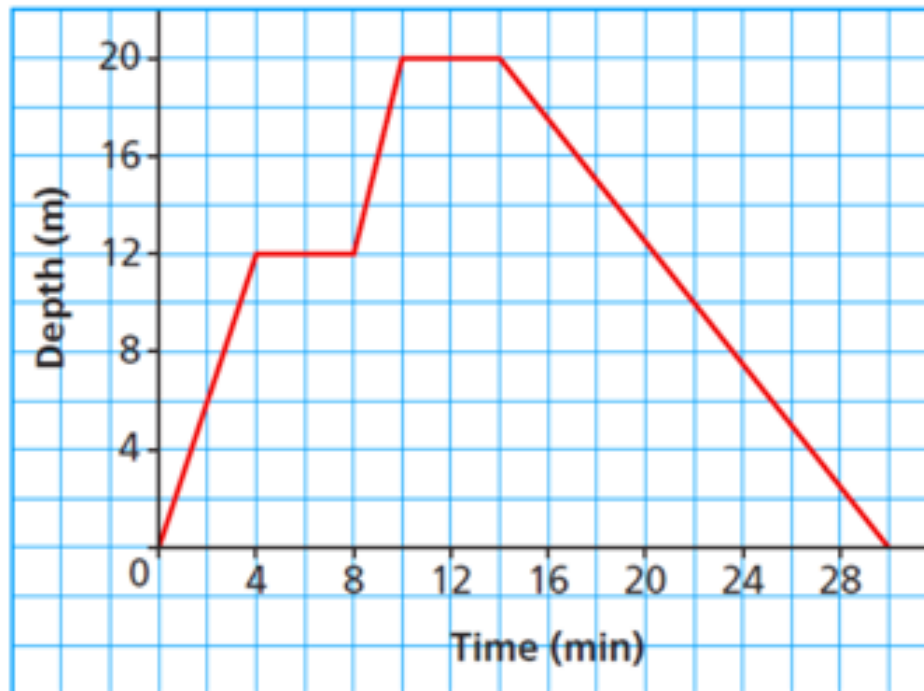
Lesson Focus

Describe a possible situation for a given graph and sketch a possible graph for a given solution

Skecthing Graphs Video part 1

Interpret a Graph

A Scuba Diver's Dive



a) How many minutes did the dive last? **30**

b) At what time did the diver stop her descent? **10**

c) What was the greatest depth the diver reached? **20**
For how many minutes did she stay at that depth? **4**

Example

Each point on this graph represents a bag of popping corn. Explain the answer to each question below.

- a) Which bag is the most expensive?
What does it cost?

B 7 *C*

- b) Which bag has the least mass?
What is this mass?

500 g *B*

- c) Which bags have the same mass?
What is this mass?

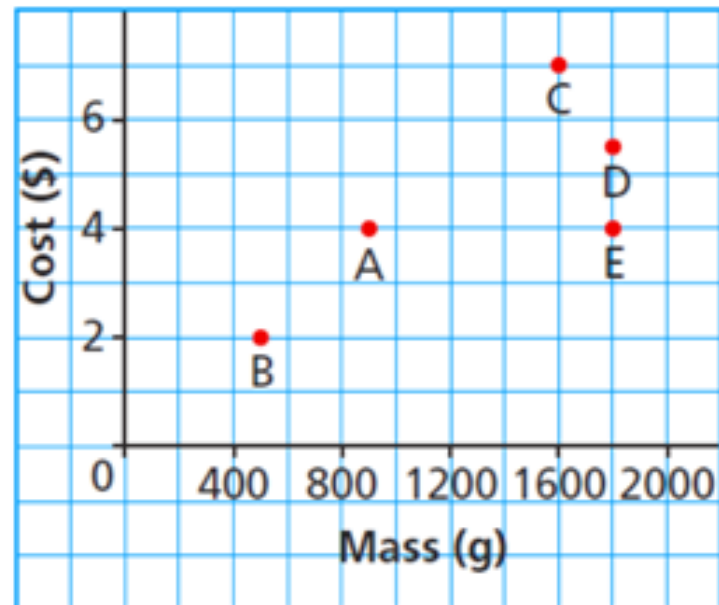
1500 g *D, E*

- d) Which bags cost the same?
What is this cost?

4 *A, E*

- e) Which of bags C or D has the better value for money?

Costs and Masses of Various Bags of Popcorn



Does this graph represent a function? Explain.

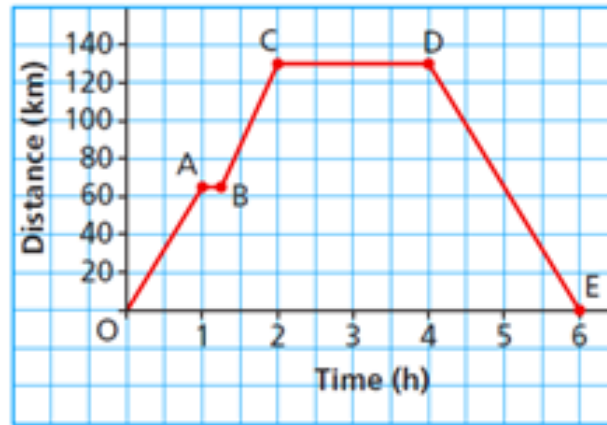
Analyzing Graphs

Students try bathtub example on their own.

Example

Describe the journey for each segment of the graph.

Day Trip from Winnipeg to Winkler, Manitoba



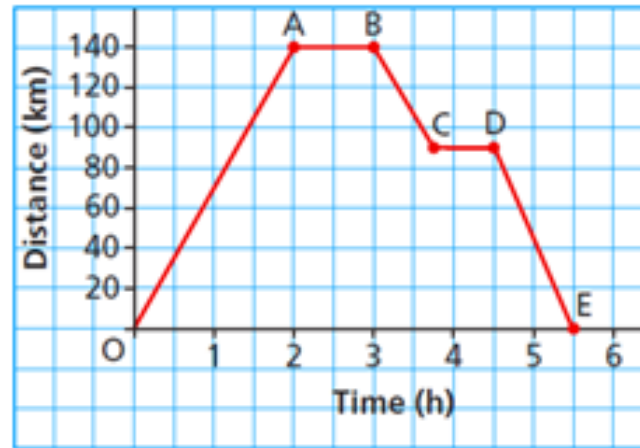
The distance between Winnipeg and Winkler is 130 km.

Section	Description	Journey
OA	The graph goes <u>up</u> and to the <u>right</u> so as <u>time</u> increases, the distance from Winnipeg <u>inc.</u>	In <u>1</u> hour, the car leaves Winnipeg and travels approx. <u>60 km</u> to Winkler
AB	The graph is <u>horz.</u> , so as time <u>inc.</u> the distance <u>same</u> .	The car <u>stops</u> for approx. <u>15 min</u>
BC	The graph goes <u>up</u> and to the <u>right</u> so as <u>time</u> increases, the distance <u>increases</u>	The car travels approx. <u>70 km</u> to Winkler.
CD	The graph is <u>horz.</u> , so as time <u>inc.</u> the distance <u>same</u> .	The car <u>stops</u> for approx. <u>2 hrs</u>
DE	The graph goes <u>down</u> and to the <u>right</u> so as <u>time</u> increases, the distance from Winnipeg <u>dec.</u>	The car returns to Winnipeg and takes <u>2 hrs</u> to travel <u>130</u> km.

Example – Your Turn

This graph represents a day trip from Athabasca to Kikino in Alberta, the distance is 140 km. Describe each segment of the trip.

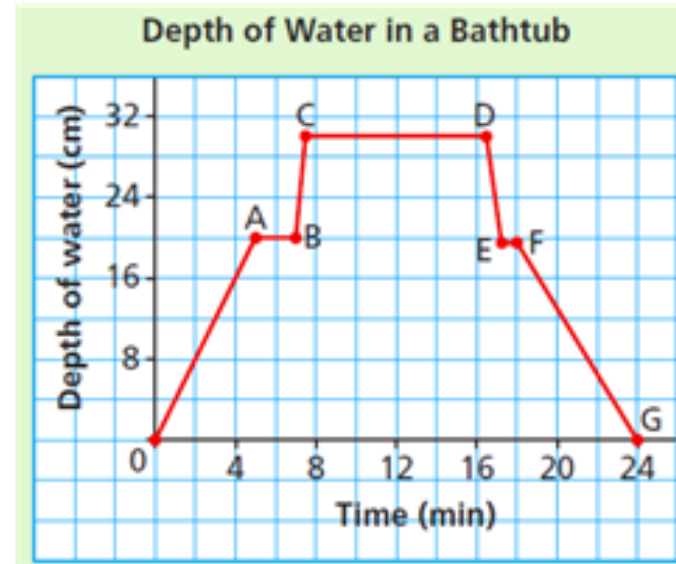
Day Trip from Athabasca to Kikino



Section	Description	Journey
OA	Graph goes up to right.	In 2hrs car travels 140 km
AB	Graph horz. to right.	Car stopped 1 hr.
BC	Graph down right	In 45 min car travels 50 km.
CD	Graph horz. right.	Car stopped 45 min
DE	Graph down right	In 1 hr car travels 90 km

Describe a Graph

Describe what's happening in the graph



Section	Description	Situation
OA	Graph up / right	Tub filled for 5 min to depth of 20 cm.
AB	Graph horz / right	2 min water shut off
BC	Graph up / right	Person sat in tub raising depth to 30 cm
CD	Graph right horz	Depth of water stays at 30 cm
DE	Down / right	Depth changed from 30 to 20 cm
EF	Graph right horizontal.	shut time depth stays at 20 cm.
FG	Right / down	The drains in 6 min.

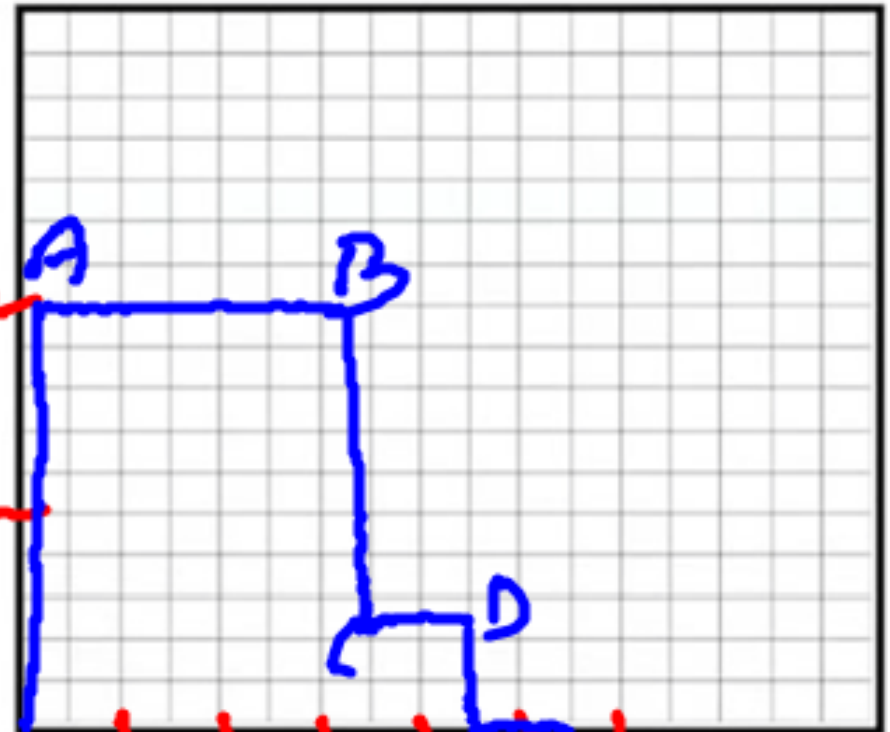
Example

Samuel went on a bicycle ride. He accelerated until he reached a speed of 20 km/h, then he cycled for 30 min at approximately 20 km/h. Samuel arrived at the bottom of a hill, and his speed decreased to approximately 5 km/h for 10 min as he cycled up the hill. He stopped at the top of the hill for 10 min.

Sketch a graph of speed as a function of time. Label each section of the graph, and explain what it represents.

speed
(km/h)

20
10

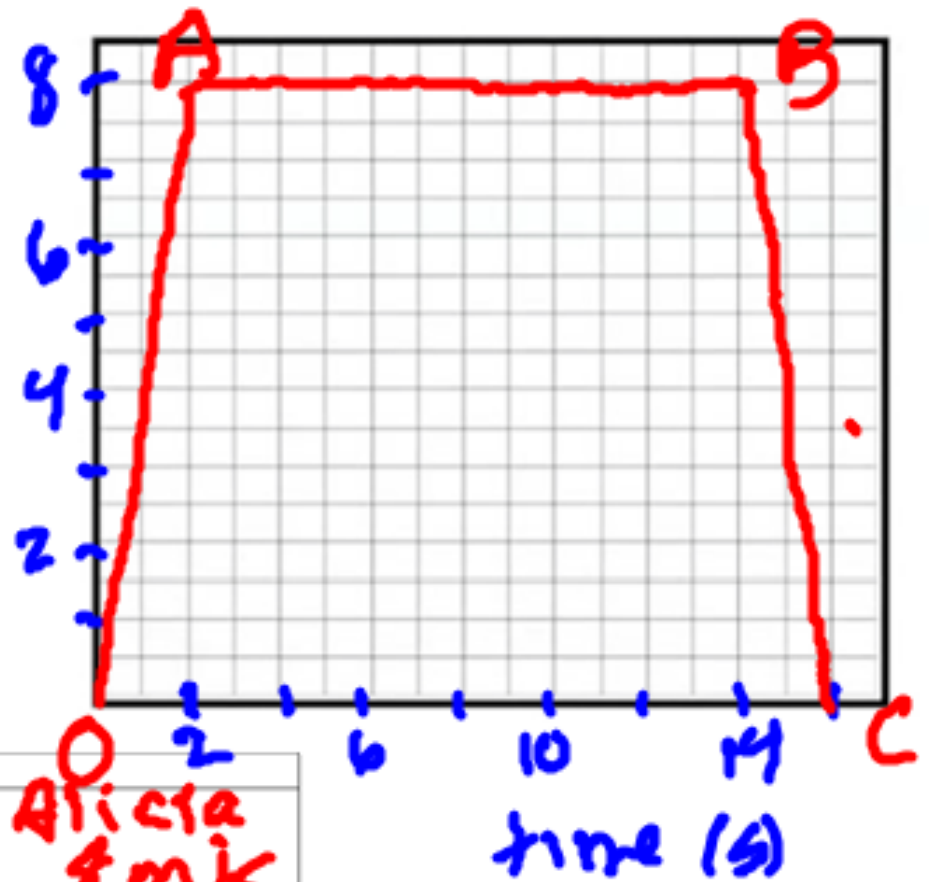


Section	Description	Journey
DA	up/right	short time Sam reaches 20 km/h
AB	Right/hor.	30 min Sam travels 20 km/h
BC	Down/Right	short time Sam's speed drops to 5 km/h
CD	Right/Hor.	for 10 min Sam travels 5 km/h
EF	Right/Hor	Sam stops for 10 min.

Example

At the beginning of a race, Alicia took 2 s to reach a speed of 8 m/s. She ran at approximately 8 m/s for 12 s, then slowed down to a stop in 2 s. Sketch a graph of speed as a function of time. Label each section of your graph, and explain what it represents.

speed
m/s



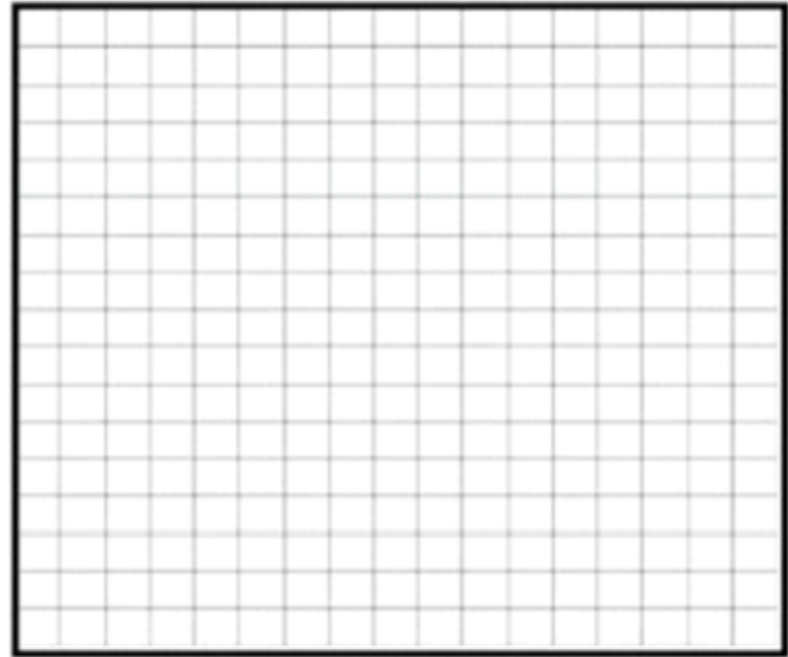
Section	Description	Journey
OA	up/right	In 2s Alicia reach 8m/s
AB	right/horz	she ran 8m/s for 12s
BC	down/right	she slowed to 0m/s in 2s.

Homework

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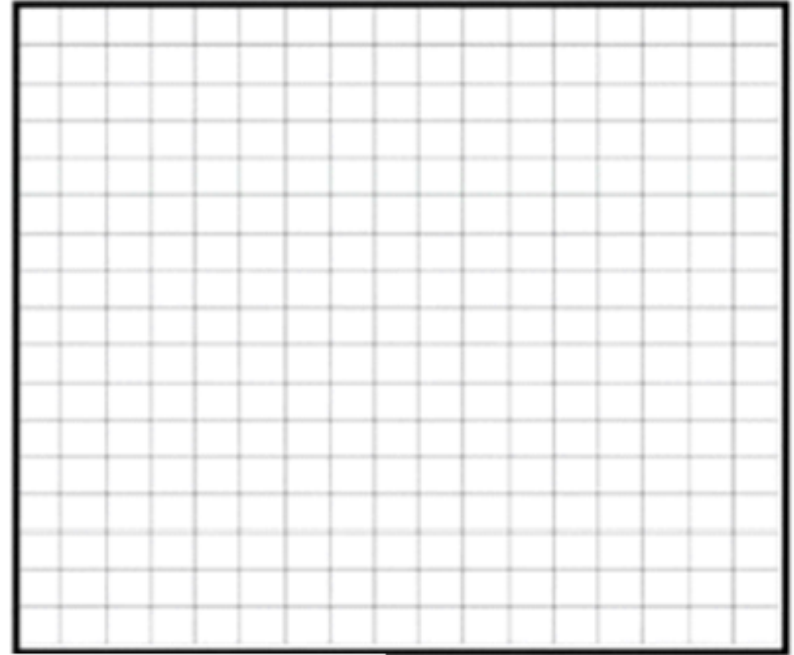
3, 4, 5, 7, 8, 10, 12, 13,

10.



Section	Description	Journey

12.



Section	Description	Journey