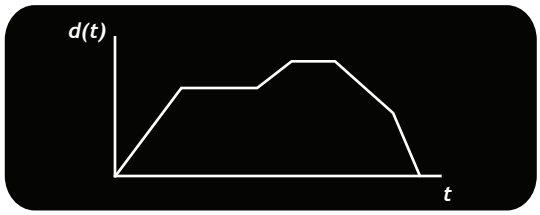
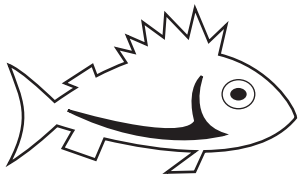


Relations and Functions
LESSON FIVE - *Interpreting Graphs*
Lesson Notes

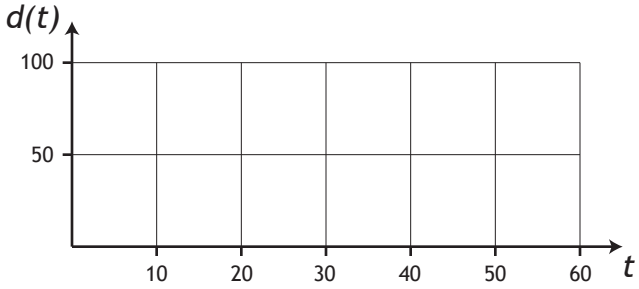
Introduction



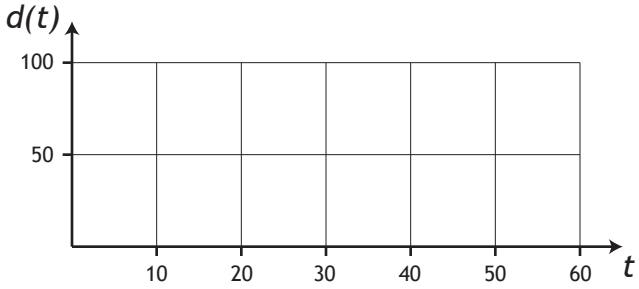
In a 100 m fish race, there are three competitors.

Teleporting Fish - has the ability to instantly warp from location to location.
Instant-Speed Fish - can reach any desired speed instantly without accelerating.
Real-World Fish - must speed up and slow down, just like objects in reality.

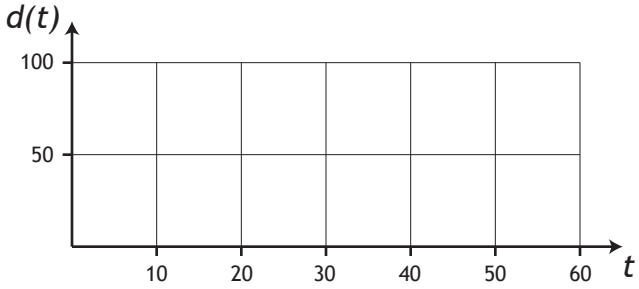
a) Teleporting Fish spends the first 20 s of the race resting at the start line. He then warps to the midpoint of the track and rests for another 20 seconds. Finally, he warps to the end and waits 20 seconds while the other fish arrive. Graph this motion.



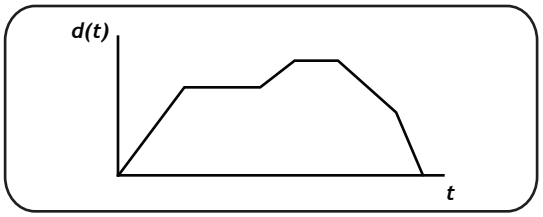
b) Instant-Speed Fish begins the race at 2.5 m/s, and sustains that speed for 20 seconds until she reaches the midpoint. After resting for 20 seconds, she resumes her speed of 2.5 m/s and heads to the finish line.



c) Real-World Fish accelerates to a speed of 2.5 m/s in 6 seconds, holds that speed for 8 seconds, and then decelerates to zero in 6 seconds - this brings him to the midpoint.
After resting for 20 seconds, Real-World fish repeats the motion - accelerate for 6 seconds, hold the speed for 8 seconds, and decelerate for 6 seconds. This brings him to the finish line.



Relations and Functions
LESSON FIVE - *Interpreting Graphs*
Lesson Notes



Example 1

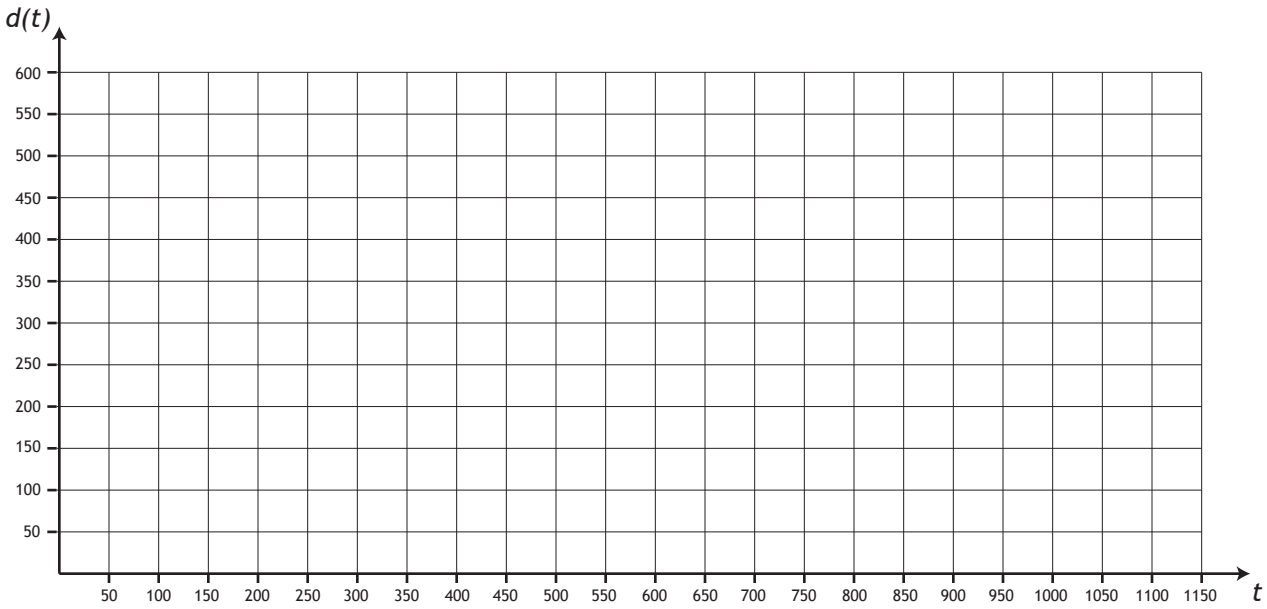
Alex walked halfway to school, but realized he forgot his calculator. He turned around, ran back home, and searched his room for five minutes trying to find the calculator. He then ran two-thirds of the way back to school, but got tired and had to walk the remaining third. Draw a graph representing Alex's journey. Assume instant speed changes.

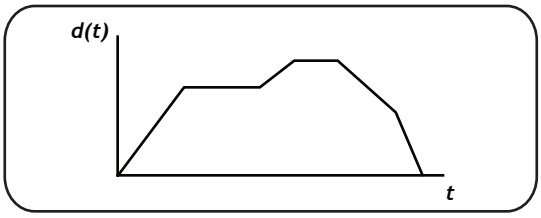
Distance from home to school	600 m
Alex's running speed	2 m/s
Alex's walking speed	1 m/s

Drawing the graph exactly requires calculations using time = $\frac{\text{distance}}{\text{speed}}$.

Find ordered pairs that will let you draw the graph. Use the space below for your work.

i) walking to school	ii) running back home	iii) looking for calculator	iv) running to school	v) walking to school



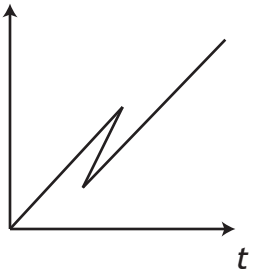


Relations and Functions
LESSON FIVE - *Interpreting Graphs*
Lesson Notes

Example 2

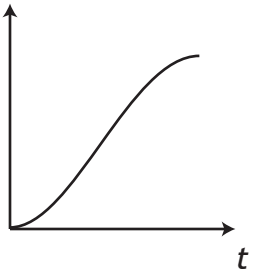
Each of the following graphs represents a potential path Naomi can take from home to school. Determine if each graph represents a possible or impossible motion.

a) *d(t)*



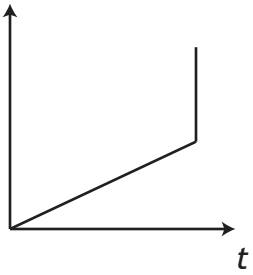
Possible: Yes No

b) *d(t)*



Possible: Yes No

c) *d(t)*

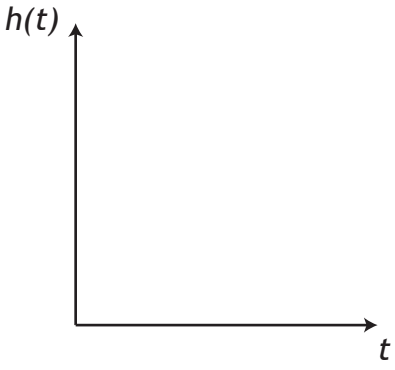


Possible: Yes No

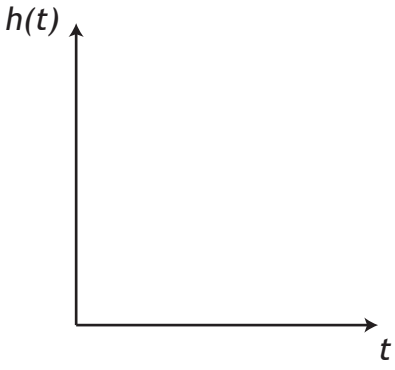
Example 3

Represent each of the following motions in graphical form.

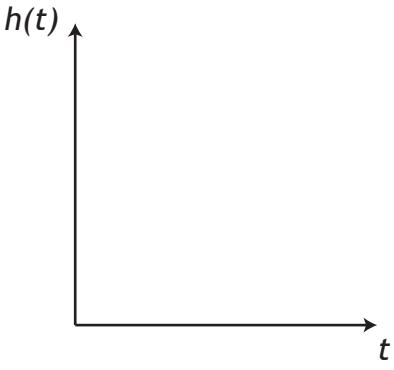
a) A ball is thrown straight up and falls back down.



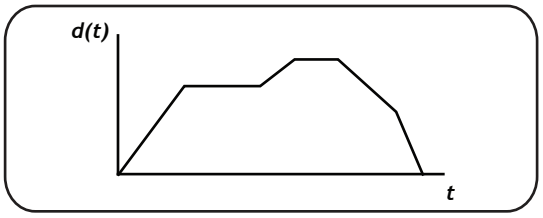
b) A rubber ball is dropped and bounces three times.



c) The swimming pool below is filled with water.



Relations and Functions
LESSON FIVE - *Interpreting Graphs*
Lesson Notes

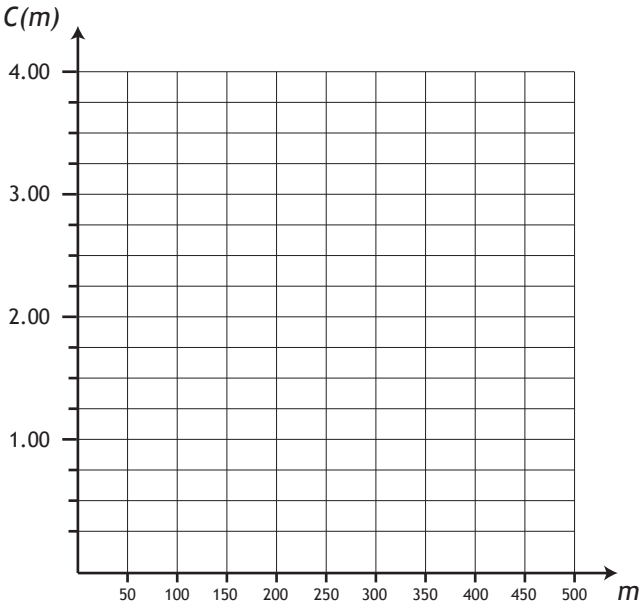


Example 4

The following table shows the Canada Post 2010 price list for mailing letters within Canada.

Letter Mass	Price
up to (and including) 30 g	$0.57
up to (and including) 50 g	$1.00
up to (and including) 100 g	$1.22
up to (and including) 200 g	$2.00
up to (and including) 300 g	$2.75
up to (and including) 400 g	$3.00
up to (and including) 500 g	$3.25

a) Graph this data



b) State the domain and range

Domain:

Range: