Name: _____ **TC**

Classwork 15

1. What is a limit? Explain in your own words.

2. In what kind of situations do we need limits? (Think about when algebra breaks down-- that is when calculus takes over....)

3. Find the **speed** in each situation.

a) I walk 20 meters in 10 seconds.

b) I run 15 yards to the train in 3 seconds.

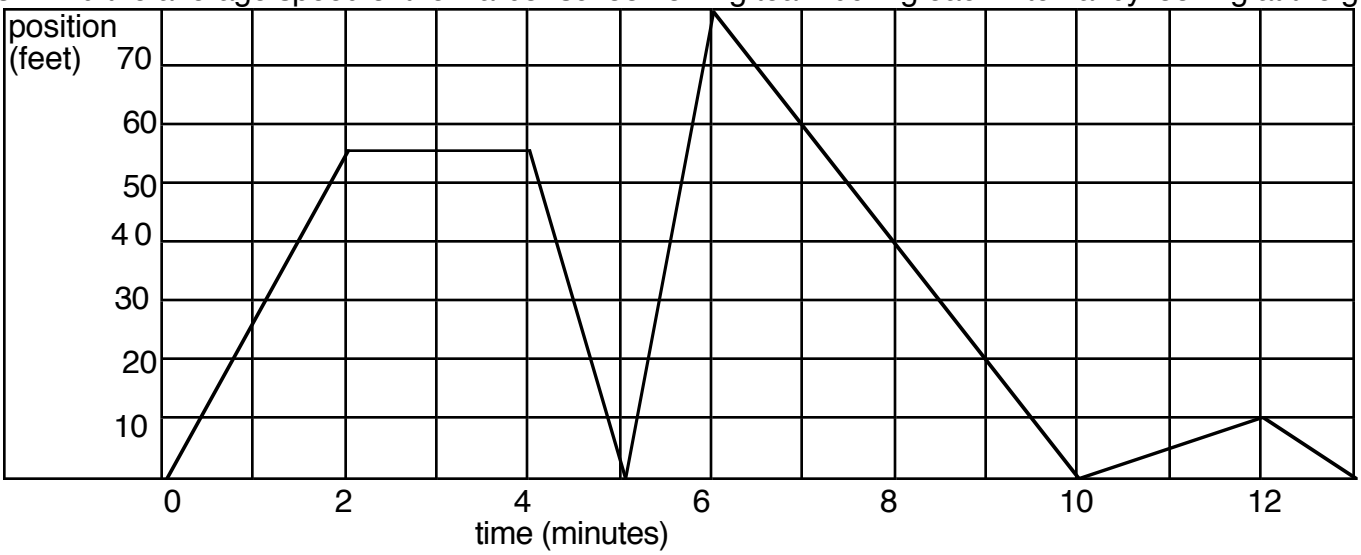
c) Lettie G., running back for the Harbor Sharks, is on the opposing team's 30 yard line with 59 seconds left in the game when she catches a pass. She makes it into the end zone with :02 left. How fast did she run?

4. Lily is sitting at home doing math problems. At 8:15 she has done 4 math problems. At 10:15, she has completed 26 math problems.

a) How fast is Lily doing math problems?

b) Sketch a **rough graph** to show how Lily is spending her evening.

5. Find the average speed of the Harbor school rowing team during each interval by looking at the graph.



a) Between t = 0 and t = 2 mins b) between t = 4 and 5 minutes c) between t = 6 and 10 minutes

d) When is the boat stopped?

e) When is it moving the fastest?

f) How can you tell when it is moving towards shore and when it is moving away from shore?

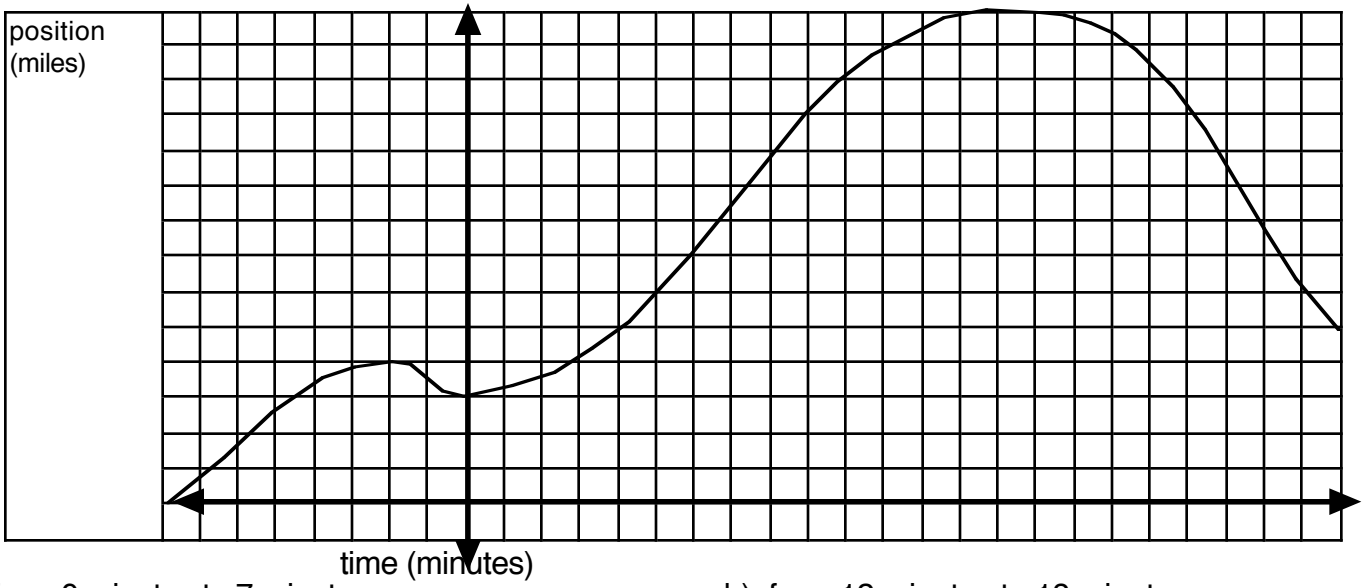
g) When is the slope of the graph 0 ?

h) When is the slope the highest?

i) When is the slope negative and when is it positive?

6. How does slope relate to speed? Why?

7. Find the speed of a bus driving through Brooklyn based on the graph.



a) from 0 minutes to 7 minutes

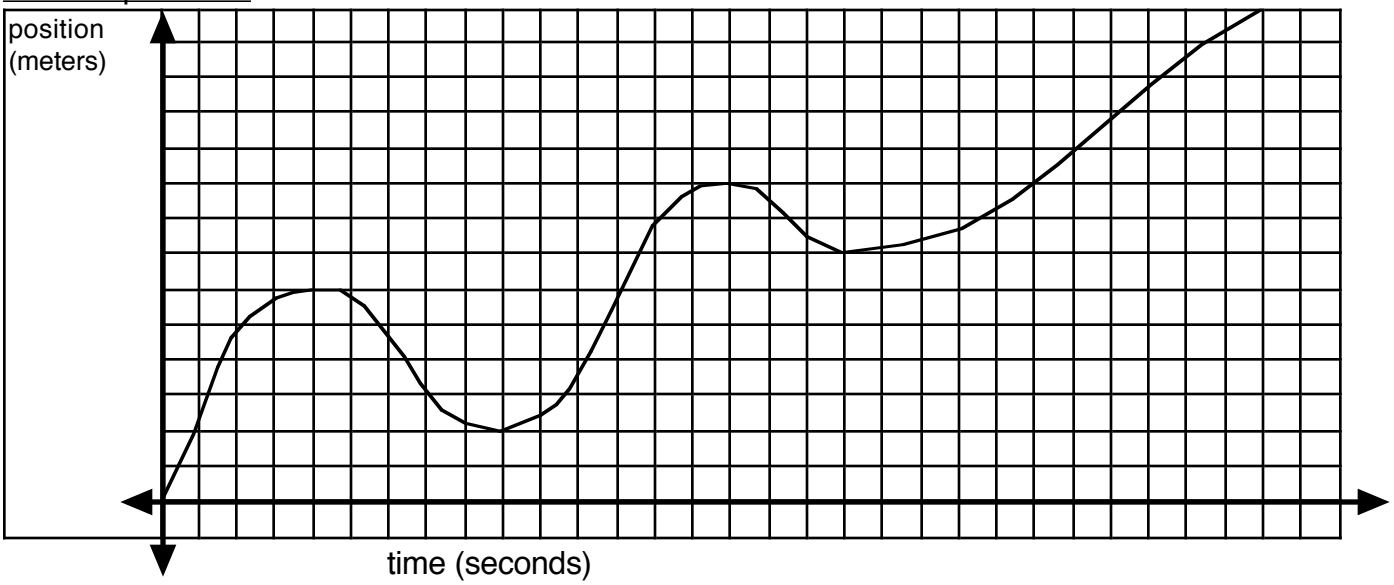
b) from 12 minutes to 18 minutes

c) from 16 minutes to 18 minutes

d) How fast is the bus going at exactly 17 minutes into the journey? Imagine the bus driver looked down at the speedometer- what would he see?

e) How does this relate to limits?

Practice problems



1. Calculate the average speed of the object over each interval.
   a) 1 s to 10 s b) 2 s to 8 s c) 3 s to 7 s d) 4s to 6 s

2. Find the instantaneous speed of the object at 5 seconds.

3. Draw a representation of that speed on the graph.

4. Write a limit representing the instantaneous speed.