



The Hobby Shop: Rocket Module

Rocket Graphing

Instructor MASTER

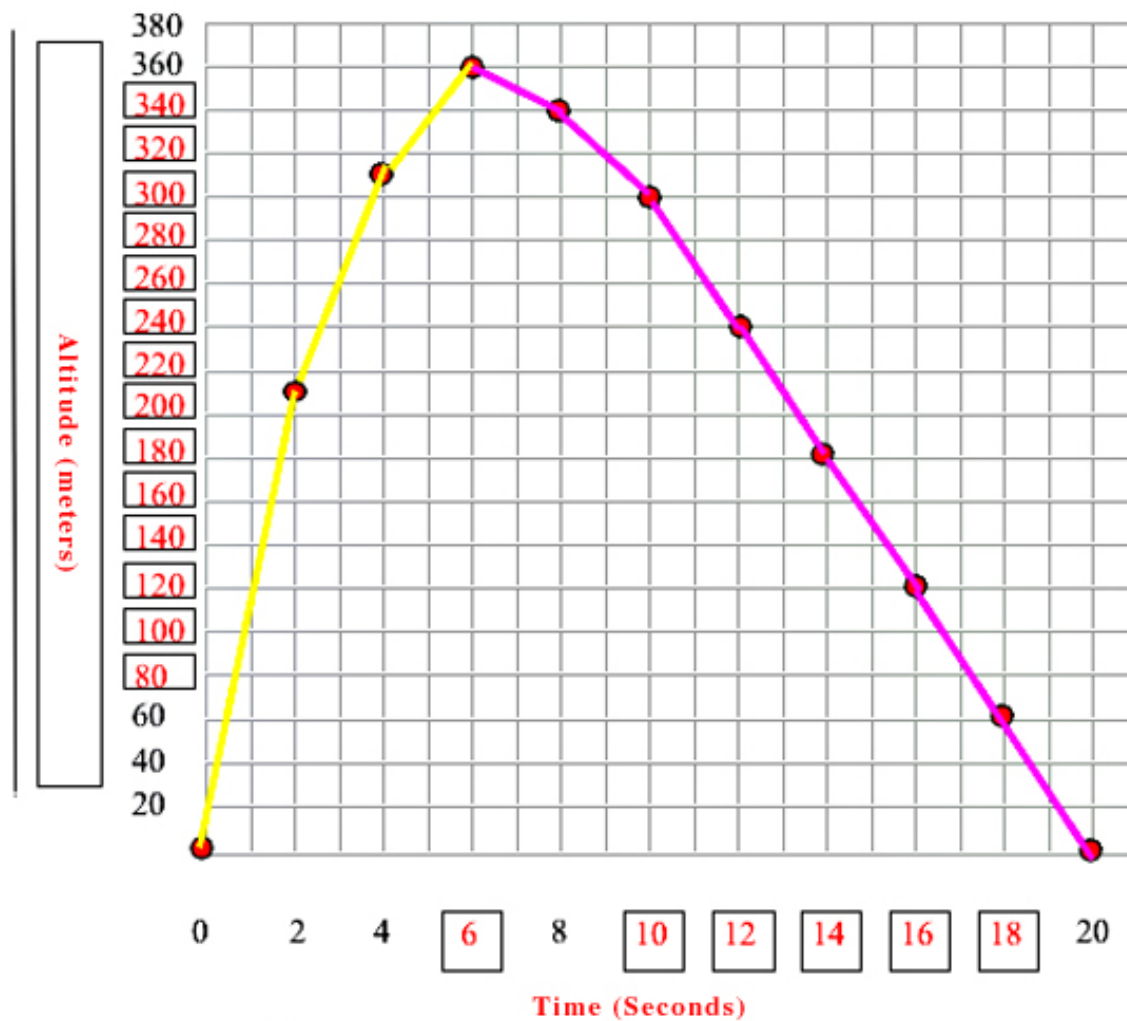
Name _____ Date _____ Class _____

Directions: Follow the directions in each situation below.

I. The following chart shows the altitude, or height, of a model rocket during its flight. Model rockets are launched, and they typically come back down to Earth by using a parachute.

Time (Seconds)	0	2	4	6	8	10	12	14	16	18	20
Altitude (Meters)	0	210	310	360	340	300	240	180	120	60	0

1. Fill in the missing numbers on the axes by writing the numbers in the empty boxes. (.5 pt each)
2. Determine what measure goes on each axis, and write the type of measurement and unit in the blanks. (.5 pt each)
3. Plot the points from your set of data and connect the points to make your graph. (6.5 points)
4. Answer the questions about your graph. (5 points each)



1. What is the highest altitude that this rocket reaches? 360 meters.
2. How long does it take the rocket to reach its maximum height? 6 seconds.
3. Using a yellow highlighter, trace over the ascent part of the graph. The ascent is the time the rocket takes from lift-off to its highest point, or the time when the rocket is going UP.
4. Using a pink highlighter, trace over the descent part of the graph. The descent is the time the rocket takes from its highest point back to the ground, or the time when the rocket is going DOWN.
5. How long does it take the rocket to fall back to the Earth from its maximum height? 14 seconds.
6. Why would it take longer for the rocket to fall than it does for the rocket to reach its maximum height? the parachute opens causing the rocket to fall more slowly

_____.

7. What is Newton's first law? ____Every object in a state of uniform motion tends to remain in that state of motion unless an external force is applied to it_____.

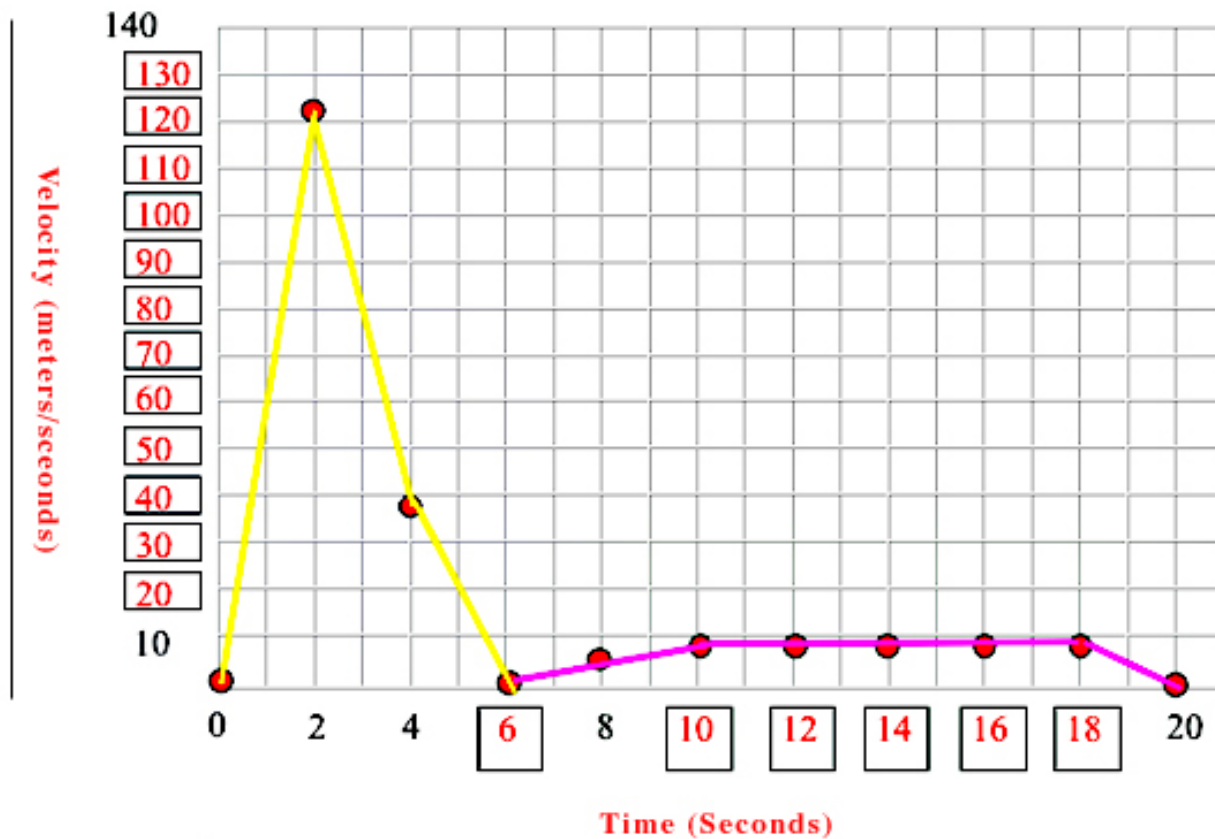
8. According to Newton's first law, the model rocket remains in the state of motion of the upward flight until an external force acts on it to cause it to change direction. What force causes the rocket to change direction?

____gravity_____.

II. The following chart shows the velocity of the same model rocket from graph I. during the same flight.

Time (Seconds)	0	2	4	6	8	10	12	14	16	18	20
Velocity (Meters/Second)	0	122	38	0	5	8	8	8	8	8	0

1. Fill in the missing numbers on the axes by writing the numbers in the empty boxes. (.5 pt each)
2. Determine what measure goes on each axis, and write the type of measurement and unit in the blanks. (.5 pt each)
3. Plot the points from your set of data and connect the points to make your graph. (6.5 points)
4. Answer the questions about your graph. (5 points each)



1. At what time does the rocket reach its maximum velocity? 2 seconds.
2. What is the maximum velocity? 122 meters/second.
3. What is the velocity when the rocket reaches its maximum height? (Hint: You may need to determine at what time the rocket reaches its maximum height from the first graph that you created and then compare this to the second graph.) 0 meters/second.
4. Using a yellow highlighter, trace over the part of the graph that represents the rocket ascent.
5. Using a pink highlighter, trace over the part of the graph that represents the rockets descent.