



ثانوية التكنولوجيا التطبيقية
Applied Technology High School

Grade 9

Physical Science

Practice Sheet

Question I

Directions: Complete the paragraph by filling in the blanks using the terms listed below.

acceleration

velocity

direction

negative

positive

time

Acceleration occurs when an object's 1. velocity changes.

When an object speeds up, it has 2. positive acceleration. When an object's final velocity is less than its initial velocity, however, it

has 3. negative acceleration. An object that is changing

4. direction is accelerating, even if its speed remains the same.

Acceleration can be calculated by dividing the change in velocity by the

5. time interval in which the change occurred. The SI unit

of 6. acceleration is m/s^2 .

Question II

Directions: Match the terms in Column II with the descriptions in Column I. Write the letter of the correct term in the blank at the left.

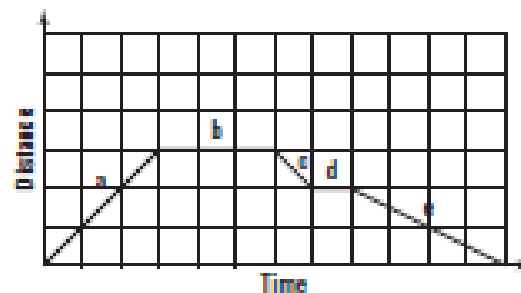
Column I

- d 7. result in a net force of zero
- E 8. the tendency of an object to resist any change in its motion
- C 9. cause an object's velocity to change
- A 10. a push or pull that can change an object's motion
- F 11. states that an object at rest will remain at rest unless acted upon by a net unbalanced force
- B 12. the combined force on an object

Column II

- a. force
- b. net force
- c. unbalanced forces
- d. balanced forces
- e. inertia
- f. Newton's first law of motion

Question III:



Directions: The distance-time graph above shows the motion of a student walking to a convenience store for a loaf of bread and returning home. Use the graph to answer questions 1 through 5.

1. In which segment was the student moving at the slowest rate of speed? E
2. Which segment indicates that the student might be stopped at the convenience store? B
3. In which two segments was the student moving at the fastest rate of speed? A & C
4. In which segment might the student be waiting for a traffic light? D
5. Which took longer, walking to the store or walking home? WALKING TO HOME

Question IV:

Directions: Find the mistakes and omissions in the statements below. Rewrite each statement correctly on the lines provided.

6. You can tell an object has moved because its velocity has changed.

TRUE

7. Displacement is how far an object moves.

FALSE, Because it shows the place of the object

8. Average speed is indicated on the speedometer.

false, instantaneous

9. A vertical line on a distance-time graph indicates that an object is stationary.

false, horizontal

10. Speed is calculated by multiplying the time of travel by the distance traveled.

false, by dividing distance/time

11. A race car driving around a track at 240 km/h has a constant velocity.

false speed

Question V:

Directions: Answer the following questions on the lines provided.

1. What is acceleration?

is the rate of changing velocity

2. When is an object accelerating?

when it changes it's velocity

3. What is the difference between positive and negative acceleration?

positive: the v_{initial} is less than v_{final} negative: the v_{initial} is more than v_{final}

4. State in words how acceleration is calculated.

1 - $v_{\text{final}} - v_{\text{initial}} / \text{time}$

2 - $F_{\text{net}} / \text{mass}$

5. Give two ways the unit for acceleration can be written.

m/s^2

N/Kg

6. What does the slope of a velocity-time graph indicate?

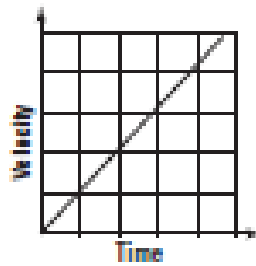
DISTANCE

7. An inline skater traveling in a straight line goes from 3 m/s to 9 m/s in 3 s. What is the acceleration?

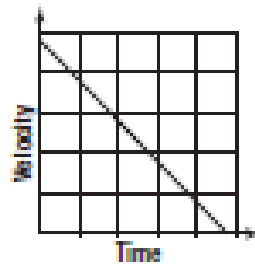
$9-3/3 = 1$

Question VI:

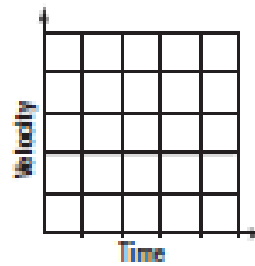
Directions: On the lines provided, indicate what kind of acceleration is shown in the following graphs.



8.



9.



10.

8. increase
9. decrease
10. no acceleration balanced force

Question VII:

Directions: Answer the following questions on the lines provided.

1. Define force.

2. List three forces being exerted as you complete this Reinforcement exercise.

3. You push on the side of a toy truck rolling along the floor. What will happen to the motion of the truck?

4. What term refers to the sum of all of the forces acting on an object?

5. If the net force on an object is zero, what do you know about all of the forces acting on the object?

6. When several people are pushing on a large rock and it starts to roll, what do you know about the forces acting on the rock?

7. What is inertia?

8. What causes a change in velocity?

change in direction or speed

9. What determines the amount of inertia an object has?

10. State Newton's first law of motion.

the object at rest will stay at rest unless an unbalanced force change it

Question VIII: Fill in the blanks:

Section 1 Describing Motion

A. movement—when an object changes its position relative to a reference point

1. distance—how far an object has moved

2. displacement—distance and direction of an object's change in position from the starting point

B. speed—distance an object travels per unit of time

1. _____—any change over time

2. Calculation for speed: $speed = distance / time$

3. Speed that doesn't change over time—constant speed

4. Speed is usually not constant; usually an object has average speed.

5. average—speed of motion when speed is changing:

$speed = total\ distance / total\ travel\ time$

6. instantaneous—speed at any given point in time

C. A distance-time graph displays motion of an object over time.

1. Plot distance on a(n) x axis.

2. Plot time on a(n) y axis.

D. velocity—speed and direction of an object's motion

E. Motion of Earth's crust—so _____ we don't notice

Section 2 Acceleration

A. acceleration—change in velocity's rate

1. negative acceleration—speed is increasing.

2. positive acceleration—speed is decreasing.

3. When an object changes speed or direction, it is accelerating.

B. Calculating acceleration

1. Acceleration = $v\ final - v\ initial$ / time

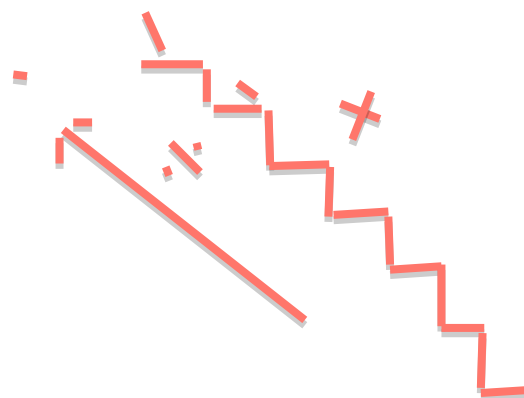
2. Change in velocity = $v\ final$ — initial velocity

3. Unit for acceleration—meters per second squared

4. Positive acceleration—positive number with a _____ slope on a velocity-time graph

Question IX: Convert the following:

1. 3km= -----mm
2. 2,400 g= -----Kg
3. 300 mL= -----dm³
4. 0.125 L=-----cm³
5. 27°C= ----- K
6. 320 K= -----°C



Question X:

1. Calculate the density of an object having a mass of 32 g and a volume of 20 cm³

=====

2. Calculate the mass of an object whose density is 7.5 g/cm³ occupying a volume of 100 cm³

Question X:

1. List the steps of scientific method

2. Compare between scientific law and scientific theory.

3. Why do scientists use models?

