

Skills Worksheet

**Concept Review**

**Section: Acceleration**

1. Calculate the average acceleration of a car that changes speed from 0 m/s to 15 m/s in 5 s.
  
2. Explain why you are always accelerating when you ride a merry-go-round, even though the speed of the merry-go-round does not change.

---



---

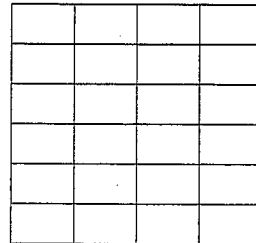


---

3. a. Graph the data from the table below onto a speed-time graph. Label both axes. Plot all the data points and draw a straight line connecting them.

**CAR SPEED**

Time (s)	Speed (m/s)
0	0
1	7.5
2	15.0
3	22.5
4	30.0



- b. Determine the car's acceleration.

---

4. Calculate how long it takes for a stone falling from a bridge with an average acceleration downward of  $9.8 \text{ m/s}^2$  to hit the water. The stone starts from rest and hits the water with a velocity of 12.3 m/s.

5. Identify the straight-line accelerations below as either speeding up or slowing down.

- \_\_\_\_\_ a.  $0.75 \text{ m/s}^2$
- \_\_\_\_\_ b.  $24.8 \text{ m/s}^2$
- \_\_\_\_\_ c.  $-3.9 \text{ m/s}^2$

# Concept Review

## Section: Motion and Force

1. **Suggest** why placing wheels under a heavy box reduces the necessary force required to push it along at a constant speed.

\_\_\_\_\_

\_\_\_\_\_

2. **Analyze** the following situations, and indicate whether the forces are balanced or unbalanced.

- \_\_\_\_\_ a. a skydiver accelerating downward
- \_\_\_\_\_ b. a cannonball fired parallel to the ground
- \_\_\_\_\_ c. a motorboat coasting at a constant speed
- \_\_\_\_\_ d. a bike leaning against a tree

3. **Evaluate** the change of motion in the following cases in which the forces on an object change from balanced to unbalanced.

a. The brake of a car parked on a hill is released.

\_\_\_\_\_

\_\_\_\_\_

b. A skydiver falling at a constant speed opens her parachute.

\_\_\_\_\_

\_\_\_\_\_

4. **Give** an example of harmful friction and describe how it can be reduced.

\_\_\_\_\_

\_\_\_\_\_

5. **Identify** the following examples of friction as harmful or helpful.

- \_\_\_\_\_ a. friction between your hands as you rub them together for warmth
- \_\_\_\_\_ b. friction between bones in a joint
- \_\_\_\_\_ c. friction between a dentist's drill and your tooth
- \_\_\_\_\_ d. friction between a saw blade and a piece of lumber