

Chapter 3

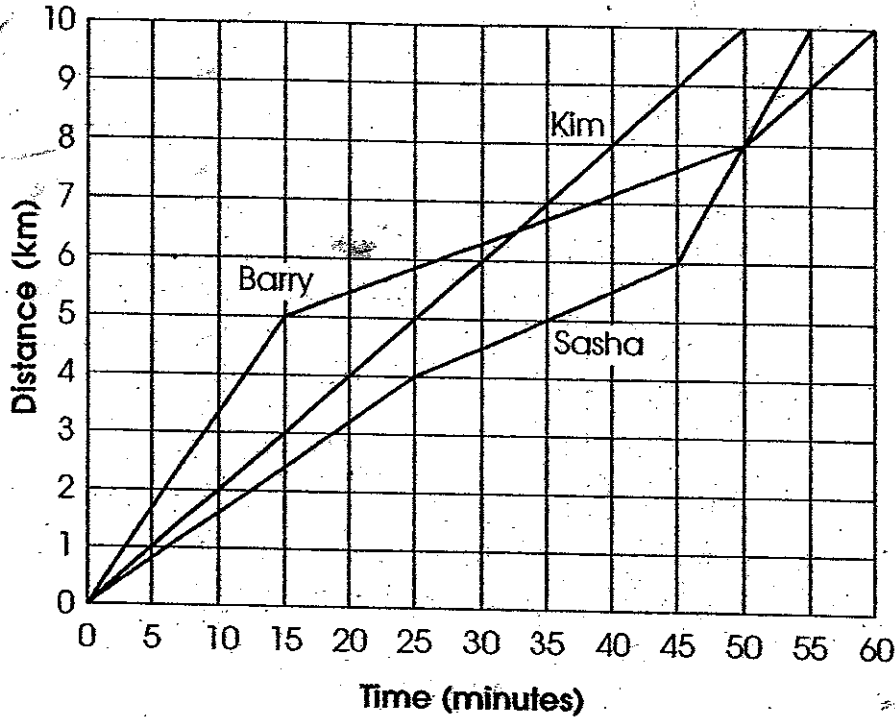
REINFORCEMENT

Use with Text Pages 64-71

3.1

● Motion and Speed

Sasha, Kim, and Barry decided to have a 10-km bicycle race after school. They asked the coach to show them how far 10 km was on the school track. They then had their race on the track. Their race results are shown on the time-distance graph below. Use this graph to fill in the table of race results, calculate average speeds, and answer the questions.



Race Results			
Cyclist	Total distance	Total time	Average speed
Kim			
Sasha			
Barry			

- Which cyclist kept a constant speed during the entire race? What was this speed? _____
- Which cyclist won the race? What was the winning time? _____
- Which cyclist placed second in the race? What was second place time? _____
- Which cyclist placed last? What was last place time? _____
- Which cyclist started off fastest? _____

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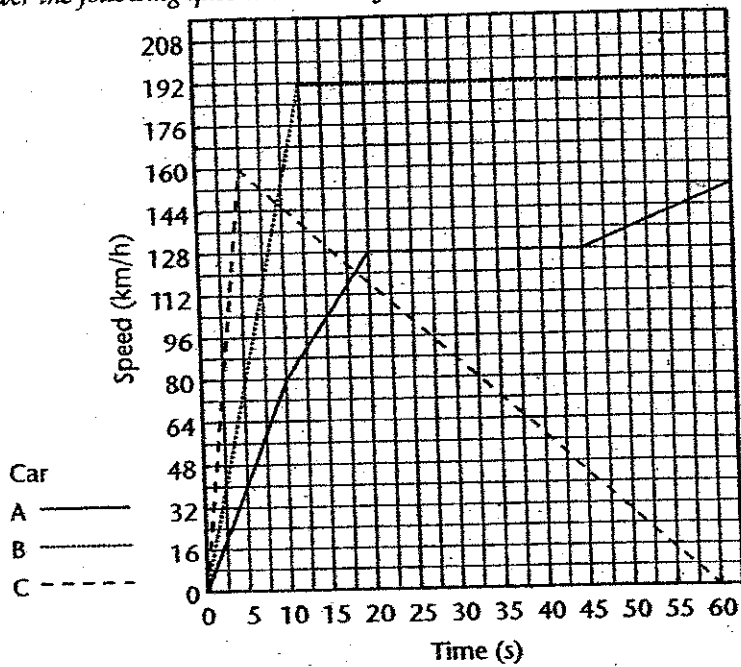
3.2

● Velocity and Acceleration

The Car Race

The graph below represents three cars during the first minute of a race. Using the following information, draw another curve on the grid representing the motion of Car D. Car D accelerates from a rest position at 0 seconds to a speed of 208 km/h at 5 seconds and maintains this speed for 5 seconds. The car decelerates to 32 km/h at 20 seconds. It then accelerates to a speed of 160 km/h at 30 seconds and maintains this speed for 5 seconds. Car D then decelerates to 64 km/h at 40 seconds, maintains this speed for 5 seconds, and accelerates to 128 km/h at 55 seconds.

Use your graph to answer the following questions. Write your answers on the lines provided.



- Over which time period is Car B's acceleration the greatest? _____
- What is Car B's speed at 10 seconds? _____
- When is Car B's acceleration equal to zero? _____
- When is Car C's acceleration equal to zero? _____
- Which car(s) have a negative acceleration during the race? _____
- Which car has traveled the farthest at the end of one minute? _____
- Which car may have had a reckless driver? Explain. _____
- Which car appears to have stalled? Explain. _____

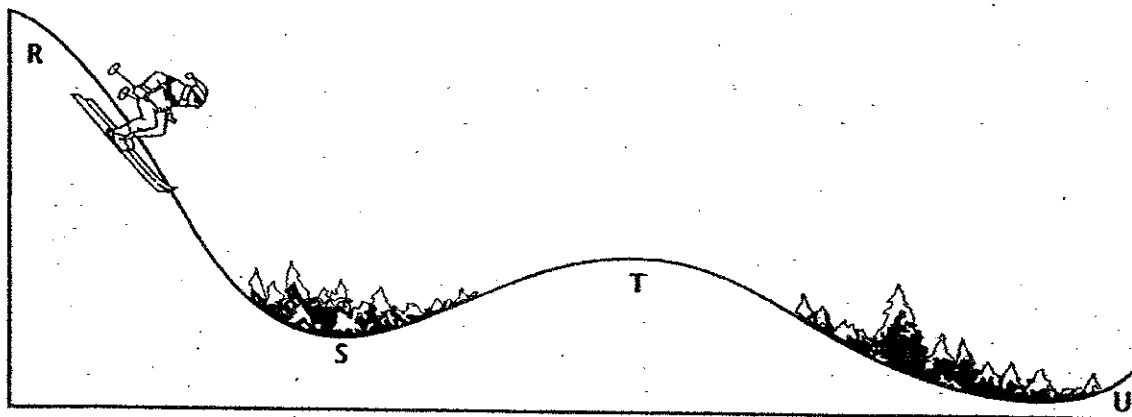
3.4 Connecting Motion with Forces

Listed below are answers. Write a question for each answer. The first one has been done as an example.

1. push or pull What is a force?

2. net force _____
3. balanced forces _____
4. friction _____
5. inertia _____
6. Newton's first law of motion _____

Study the diagram below. Then answer the following questions by circling the letter that best answers each question.



7. A person skis downhill from point R to point U. The speed of the skier increases in going from point R to point S because
 - a. only balanced forces act on the skier.
 - b. an unbalanced force acts on the skier.
 - c. only inside forces act on the skier.
 - d. no forces act on the skier.
8. The skier is able to coast between points S and T even though it is uphill because of
 - a. gravity.
 - b. centripetal force.
 - c. cohesive force.
 - d. inertia.
9. The force that opposes motion between the skier's skis and the surface of the snow is
 - a. net.
 - b. balanced.
 - c. friction.
 - d. inertia.

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3.5

● Gravity—A Familiar Force

Write answers to the following questions on the blank lines provided.

1. What is gravity? _____

2. What are two things that the amount of gravitational force between two objects depends on?

3. Why does Earth exert a stronger gravitational force than the moon? _____

4. If an object weighs 40 N on Earth, would it weigh more than 40 N on the moon? Explain your answer. _____

5. If an object has a mass of 26 g on Earth, would its mass be less than 26 g on the moon? Explain your answer. _____

Circle the picture in each set below that shows the greater gravitational force between the two objects.

