CHAPTER 12 Chapter Review

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Chapter 12 Review Chart

- Have students work with a partner to review the vocabulary words on page 368 of the Student Book. Each pair of students should discuss the meanings of the terms and, if possible, draw a sketch to illustrate each meaning. Encourage students to look back through the chapter if they have difficulty with any terms.
- Lead the class in a review discussion of key figures in the chapter and what principles those figures represent or demonstrate. For example, Figure 5 on page 356 of the Student Book illustrates the method of using a tangent line to determine instantaneous speed on a distance–time graph, Figure 1 on page 359 shows the difference between distance and displacement, and Figure 5 on page 362 is an example of a position–time graph.
- Have students use their Study Guides from the Student Workbook to review what they have learned in this chapter. They should use these guides and their notes to review the key ideas given in the Chapter Review.
- Have students use *BLM 0.0-10 Chapter Key Ideas* to review the key ideas in the chapter.

Time

45–60 min

Skills and Processes

The Chapter Review provides an opportunity for students to demonstrate their understanding of and their ability to apply the key ideas, vocabulary, and skills and processes.

Program Resources

BLM 0.0-10 Chapter Key Ideas
WS 12.0-1 Chapter Checklist
WS 12.0-2 Chapter 12 Quiz
Nelson Science Probe 10 website
www.science.nelson.com

- Students can complete *WS 12.0-1 Chapter Checklist* to self-check their knowledge of the prescribed learning outcomes and achievement indicators presented in the chapter.
- Have students complete *WS 12.0-2 Chapter 12 Quiz* to review the vocabulary and concepts in this chapter.

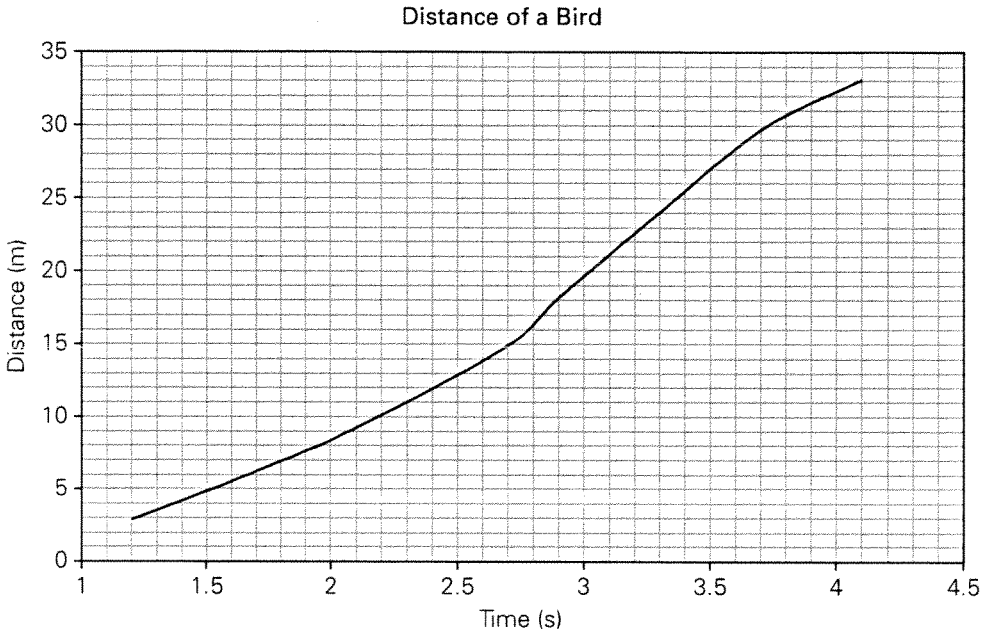
Review Key Ideas and Vocabulary—Suggested Answers

1. Sample response: If you walk 2 km west and then 2 km east, the distance of your walk is 4 km, but your displacement is 0 km.
2. Sample response: Period is the amount of time between two events that happen repeatedly.
3. B

Use What You've Learned—Suggested Answers

4. B
5. D
6. D
7. **(a)** 150 cm; **(b)** 5.4 cm/s; **(c)** 0.71 cm/s toward the 0 cm end of the metre stick
8. **(a)** no; **(b)** at the beginning; **(c)** at the end
9. The Cadillac has a higher average speed (89 km/h). The Cadillac arrives in 1 h 34 min, and the Volkswagen arrives in 1 h 45 min; the Cadillac arrives first. About 11 min separate the arrival times of the cars.
10. **(a)** 45 km; **(b)** about 4.1 km; **(c)** about 49 km; **(d)** about 22 km/h
11. B
12. A

13. (a)



(b) 8.1 m/s; **(c)** about 15 m/s

14. A

Think Critically—Suggested Answers

15. A

16. Yes; the magnitude of the displacement will be the same as distance if the motion is in one direction.

Reflect on Your Learning—Suggested Answers

17. Sample answer: The slope on a distance–time graph is the speed of the object. The slope on a position–time graph is the velocity of the object.

Meeting Individual Needs

Extra Support

- Have students work with partners to write step-by-step descriptions of how to find instantaneous speed and average speed on a distance–time graph and how to find instantaneous velocity and average velocity on a position–time graph.
- Have students demonstrate the concepts of distance and displacement by walking different paths across the classroom. Then, have them demonstrate how you can have constant speed but changing velocity. An example is walking in a circle at a constant speed.

Extra Challenge

- Have students draw a distance–time graph and a position–time graph that demonstrate different speeds and velocities. Then, have students write at least five questions and answers for each graph.
- Have students work with a partner to make a poster that explains the concepts they have learned in this chapter. Encourage students to imagine that they have to teach this material to younger students. Suggest that students include vocabulary terms as well as explanations of distance–time graphs and position–time graphs.

Chapter 12 - Review Solutions

#1-3 see key

#4 - $T(\text{period}) = \frac{1}{f}$ $\qquad \frac{72 \text{ beats}}{1 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec}} = 1.2 \text{ beats/sec or } 1.2 \text{ Hz}$

$f = \frac{1}{T}$ $\qquad$ also $\frac{1}{1.2 \text{ Hz}} = 0.83 \text{ sec}$

#5 $v_{av} = \frac{800 \text{ km}}{\text{hr}}$ $\qquad v = \frac{d}{t}$ ∴ $t = \frac{d}{v}$

$t = 2400 \text{ km} \div \frac{800 \text{ km}}{\text{hr}} \rightarrow 2400 \text{ km} \times \frac{1 \text{ hr}}{800 \text{ km}} = 3 \text{ hours}!$

* Notice the units work

#6 $d = t \times v$

$= 12 \text{ sec} \times \frac{15 \text{ m}}{\text{sec}} = 180 \text{ m}$

#7 150 cm

$= |150 - 10| + |10 - 75| + |75 - 30|$

#8) a see key #

#9) Volks $v_{av} = 80 \text{ km/hr}$ $\qquad$ Volks $t = \frac{140 \text{ km}}{80 \text{ km/hr}} = 1.75 \text{ hr or } 1 \text{ hr } 45 \text{ min}$

Cadillack $\Delta d = 140 \text{ km}$

$\Delta t = t + 10 \text{ min}$

$= 1 \text{ hr } 55 \text{ min}$

$= 1.92 \text{ hr}$

Cadi $v_{av} = \frac{140 \text{ km}}{1.92 \text{ hr}} = 72.9 \text{ km/hr}$

$t = \frac{140}{100 \text{ km/hr}} + 10 \text{ min}$

$= 1.4 \text{ hr} + 10 \text{ min}$

$= 1.57 \text{ hr}$

Cadi $v_{av} = \frac{\Delta d}{\Delta t} = \frac{140 \text{ km}}{1.57 \text{ hr}}$

$= 89 \text{ km/hr}$

#10) a) $d_1 = 60 \text{ km/hr} \times 0.75 \text{ hr} = 45 \text{ km}$

$45 \text{ min} \times \frac{1 \text{ hr}}{60 \text{ min}} = .75 \text{ hr}$

b) $d_2 = 0.75 \text{ m/s} \times \frac{1 \text{ km}}{1000 \text{ m}} \times \frac{3600 \text{ s}}{1 \text{ hr}}$

$= 2.7 \text{ km/hr}$

$= 2.7 \text{ km/hr} \times 1.5 \text{ hr} = 4.05 \text{ km}$

c) ∴ 49 km