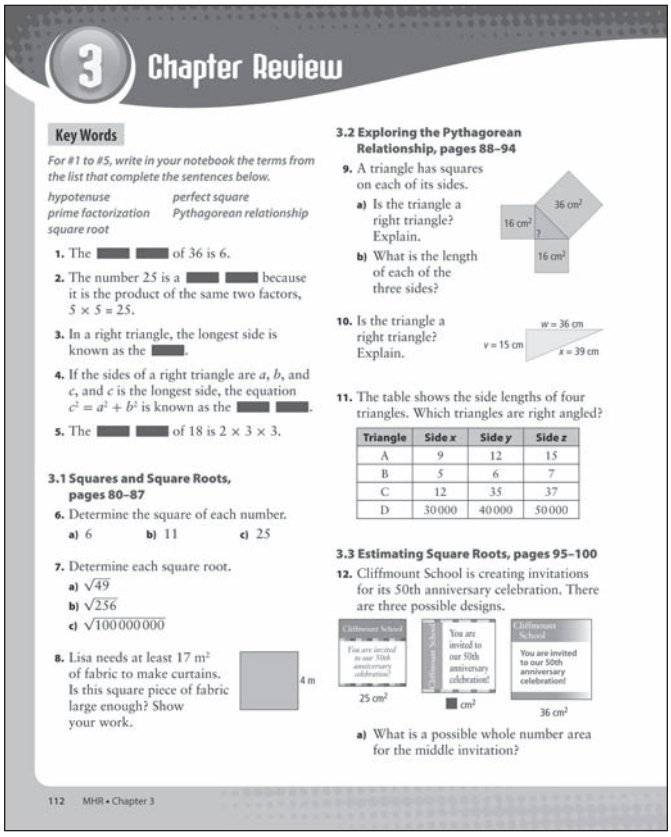
# Chapter Review 3



3 Chapter Review

**Key Words**

*For #1 to #5, write in your notebook the terms from the list that complete the sentences below.*

*hypotenuse* *perfect square*
*prime factorization* *Pythagorean relationship*
*square root*

1. The ▬ ▬ of 36 is 6.
2. The number 25 is a ▬ ▬ because it is the product of the same two factors, $5 \times 5 = 25$.
3. In a right triangle, the longest side is known as the ▬.
4. If the sides of a right triangle are $a$, $b$, and $c$, and $c$ is the longest side, the equation $c^2 = a^2 + b^2$ is known as the ▬ ▬.
5. The ▬ ▬ of 18 is $2 \times 3 \times 3$.

**3.1 Squares and Square Roots, pages 80–87**

6. Determine the square of each number.
   a) 6 b) 11 c) 25
7. Determine each square root.
   a) $\sqrt{49}$
   b) $\sqrt{256}$
   c) $\sqrt{100\,000\,000}$
8. Lisa needs at least 17 m² of fabric to make curtains. Is this square piece of fabric large enough? Show your work.




**3.2 Exploring the Pythagorean Relationship, pages 88–94**

9. A triangle has squares on each of its sides.
   a) Is the triangle a right triangle? Explain.
   b) What is the length of each of the three sides?




10. Is the triangle a right triangle? Explain.




11. The table shows the side lengths of four triangles. Which triangles are right angled?

| Triangle | Side x | Side y | Side z |
|---|---|---|---|
| A | 9 | 12 | 15 |
| B | 5 | 6 | 7 |
| C | 12 | 35 | 37 |
| D | 30 000 | 40 000 | 50 000 |

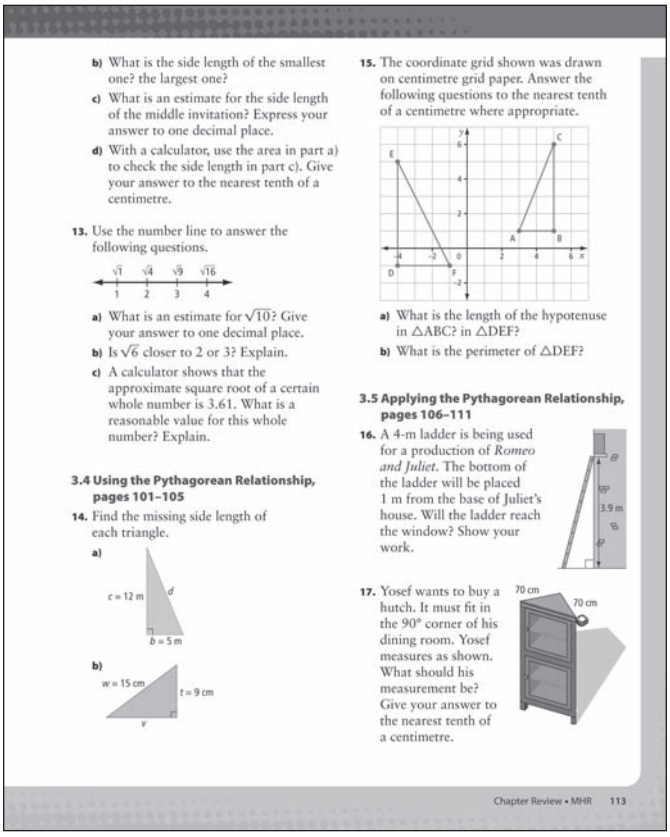
**3.3 Estimating Square Roots, pages 95–100**

12. Cliffmount School is creating invitations for its 50th anniversary celebration. There are three possible designs.




   a) What is a possible whole number area for the middle invitation?





   b) What is the side length of the smallest one? the largest one?
   c) What is an estimate for the side length of the middle invitation? Express your answer to one decimal place.
   d) With a calculator, use the area in part a) to check the side length in part c). Give your answer to the nearest tenth of a centimetre.
13. Use the number line to answer the following questions.




   a) What is an estimate for $\sqrt{10}$? Give your answer to one decimal place.
   b) Is $\sqrt{6}$ closer to 2 or 3? Explain.
   c) A calculator shows that the approximate square root of a certain whole number is 3.61. What is a reasonable value for this whole number? Explain.

**3.4 Using the Pythagorean Relationship, pages 101–105**

14. Find the missing side length of each triangle.
   a)




   b)




15. The coordinate grid shown was drawn on centimetre grid paper. Answer the following questions to the nearest tenth of a centimetre where appropriate.




   a) What is the length of the hypotenuse in △ABC? in △DEF?
   b) What is the perimeter of △DEF?

**3.5 Applying the Pythagorean Relationship, pages 106–111**

16. A 4-m ladder is being used for a production of *Romeo and Juliet*. The bottom of the ladder will be placed 1 m from the base of Juliet's house. Will the ladder reach the window? Show your work.




17. Yosef wants to buy a hutch. It must fit in the 90° corner of his dining room. Yosef measures as shown. What should his measurement be? Give your answer to the nearest tenth of a centimetre.






***MathLinks 8*, pages 112–113**

**Suggested Timing**
40–50 minutes

**Blackline Masters**
BLM 3–7 Section 3.1 Extra Practice
BLM 3–10 Section 3.2 Extra Practice
BLM 3–12 Section 3.3 Extra Practice
BLM 3–14 Section 3.4 Extra Practice
BLM 3–16 Section 3.5 Extra Practice

## Planning Notes

For #1 to #5, students may wish to review the terms in pairs. One student could read the sentences and the other could say the term that belongs in the blank.

Have students work individually or in pairs to complete the remaining questions. If they encounter difficulties, remind them to refer to their Foldable for the chapter, their worked exercises for the section, or the modelled examples in the appropriate section of the student resource.

You may wish to have students record the numbers from 6 to 17 in two columns in their notebook. As they read each question, have students indicate the questions they need a little help with, a lot of help with, or no help with. Students can use this information to identify sections they particularly need to revisit before the practice test.

## Meeting Student Needs

- Students who require more practice on a particular topic may refer to **BLM 3–6 Section 3.1 Extra Practice**, **BLM 3–10 Section 3.2 Extra Practice**, **BLM 3–12 Section 3.3 Extra Practice**, **BLM 3–14 Section 3.4 Extra Practice**, and **BLM 3–16 Section 3.5 Extra Practice**.
- Allow students to complete the chapter review using a combination of oral descriptions, diagrams, and written answers.
- Encourage students to use their chapter Foldable and to add new notes if they wish.

### ELL

- You may choose to have some students complete fewer word problems, as these learners may find deciphering the language too challenging and time consuming.

### Gifted and Enrichment

- Some students may already be familiar with the skills handled in this review. To provide enrichment and extra challenge, go to www.mathlinks8.ca and follow the links.

## Common Errors

- For their estimate in #13a), some students may not use perfect square benchmarks.

**$R_x$** Remind students that to estimate $\sqrt{10}$ they need to use the number line. Ask them where $\sqrt{10}$ belongs above the number line and then have them estimate what value would go below it on the number line.

- In #14b), some students may substitute the values into the equation for the Pythagorean relationship as though they are determining the missing hypotenuse length of the right triangle.

**$R_x$** Tell students to review the Key Ideas for section 3.2. Next, have them copy the diagram from #14b) and label each side with the variables and side lengths, along with either *leg* or *hypotenuse* (e.g., hypotenuse $w = 15$ cm). Then, have them write the equation for the Pythagorean relationship, using the variables from their diagram.

| Assessment | Supporting Learning |
|---|---|
| **Assessment *for* Learning** | |
| **Chapter 3 Review**<br>The Chapter 3 Review is an opportunity for students to assess themselves by completing selected questions in each section and checking their answers against the answers in the back of the student resource. | • Have students check the contents of the What I Need to Work On tab of their chapter Foldable and do at least one question related to each listed item.<br>• Have students revisit any section that they are having difficulty with prior to working on the chapter test. |