Chapter 4 Practice Test

Student Text Pages
204–205

Suggested Timing
70 min

Tools
- grid paper

Technology Tools
- graphing calculator

Related Resources
- G–1 Grid Paper
- G–3 Coordinate Grids
- BLM 4–16 Chapter 4 Practice Test
- BLM 4–17 Chapter 4 Test
- BLM 4–18 Chapter 4 Practice Test Achievement Check Rubric

Accommodations

Perceptual—Encourage students to work together in study groups.

Motor—If possible, let students dictate their answers to the Chapter Review and Practice Test to someone who can record the responses and answers.

Language—If possible, allow students time to complete the Review questions and Practice Test in the school's language lab, where the questions are read to the student.

Memory—Allow students to give oral responses to the Chapter Review questions and the Practice Test. Provide students with extra visual and verbal cues and prompts.

ESL—Allow students extra time to complete the Chapter Review and the Practice Test.

Study Guide

Use the following study guide to direct students who have difficulty with specific questions to the appropriate examples for review.

Question	Section(s)	Refer to
1	4.3/4.4	Example (pages 176–177)/Example 1 (page 182)
2	4.5	Example 1 (page 190)
3	4.4/4.5	Example 2 (pages 182–183)/Example 2 (pages 190–191)
4	4.6	Example 1 (page 197)
5	4.1/4.2	Investigate (pages 164–165)/Investigate B (page 169)
6	4.2	Example (pages 170–171)
7	4.5	Example 2 (pages 190–191)
8	4.3	Example (pages 176–177)
9	4.3	Example (pages 176–177)
10	4.2	Example (pages 170–171)
11	4.6	Example 2 (page 198)
12	4.4	Example 1 (page 182)
13	4.2/4.3/4.4	Investigate A and B (pages 168–169)/Example (pages 176–177)/Example 2 (pages 182–183)

Using the Practice Test

This Practice Test can be assigned as an in-class or take-home assignment. If it is used as an assessment, use the following guidelines to help you evaluate the students.

Can students do each of the following?
- Graph a simple parabola $y = x^2$
- Graph a parabola involving a single transformation from $y = x^2$
- Graph a parabola involving two transformations from $y = x^2$
- Graph a parabola involving multiple transformations from $y = x^2$
- State the vertex and equation of the axis of symmetry of a parabola given its equation in the form $y = a(x - h)^2 + k$
- State the direction of opening of a parabola given its equation in the form $y = a(x - h)^2 + k$
- Graph a parabola from an equation of the form $y = a(x - r)(x - s)$ and find its vertex
- Given the graph of a parabola, with vertex and one other point, or two x-intercepts labelled, determine an equation for the parabola
- Apply skills involving parabolas to real-life examples; in particular, finding and interpreting maximum or minimum values and overall width of parabolic shapes
- Evaluate simple powers with zero and negative exponents
- Apply skills with zero and negative exponents to simple real-life examples involving exponential growth and decay
- Communicate understanding through justification or explanations

Summative Assessment

- After students complete **BLM 4–16 Chapter 4 Practice Test**, use **BLM 4–17 Chapter 4 Test** as a summative assessment.

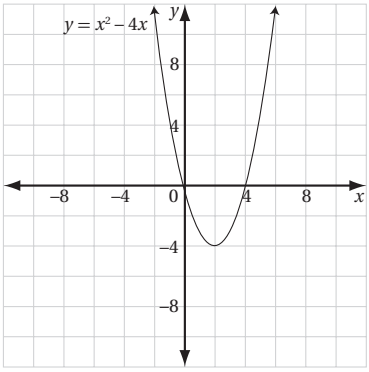
Achievement Check Sample Solution, question 13, page 205

Provide students with **BLM 4–18 Chapter 4 Practice Test Achievement Check Rubric** to help them understand what is expected.

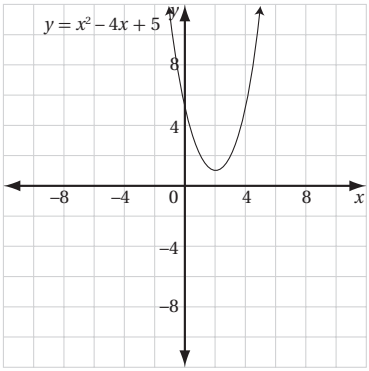
Note: This question can be done with or without technology.

13. a)

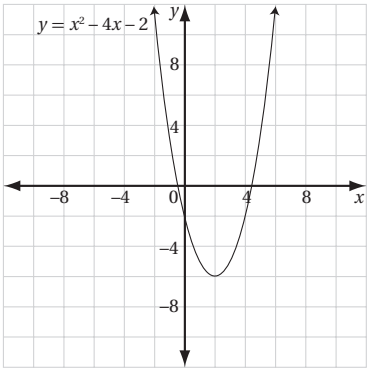
$y = x^2 - 4x$			
x	y	First Differences	Second Differences
−2	12		
		5 − 12 = 7	
−1	5		−5 − (−7) = 2
		0 − 5 = −5	
0	0		−3 − (−5) = 2
		−3 − 0 = −3	
1	−3		−1 − (−3) = 2
		−4 − (−3) = −1	
2	−4		1 − (−1) = 2
		−3 − (−4) = 1	
3	−3		3 − 1 = 2
		0 − (−3) = 3	
4	0		5 − 3 = 2
		5 − 0 = 5	
5	5		



$y = x^2 - 4x + 5$			
x	y	First Differences	Second Differences
−2	17		
		10 − 17 = −7	
−1	10		−5 − (−7) = 2
		5 − 10 = −5	
0	5		−3 − (−5) = 2
		2 − 5 = −3	
1	2		−1 − (−3) = 2
		1 − 2 = −1	
2	1		1 − (−1) = 2
		2 − 1 = 1	
3	2		3 − 1 = 2
		5 − 2 = 3	
4	5		5 − 3 = 2
		10 − 5 = 5	
5	10		



$y = x^2 - 4x - 2$			
x	y	First Differences	Second Differences
−2	10		
		3 − 10 = −7	
−1	3		−5 − (−7) = 2
		−2 − 3 = −5	
0	−2		−3 − (−5) = 2
		−5 − (−2) = −3	
1	−5		−1 − (−3) = 2
		−6 − (−5) = −1	
2	−6		1 − (−1) = 2
		−5 − (−6) = 1	
3	−5		3 − 1 = 2
		−2 − (−5) = 3	
4	−2		5 − 3 = 2
		3 − (−2) = 5	
5	3		



b) i) $y = (x - 2)2 - 4$ **ii)** $y = (x - 2)2 + 1$ **iii)** $y = (x - 2)2 - 6$

c) The graph always opens upward. The equation of the axis of symmetry is $x = 2$ for all values of c. For $c < 4$, the graph has two x-intercepts, and the vertex is below the x-axis. For $c = 4$, it has two identical x-intercepts at $x = 2$. For $c > 4$, the graph has no x-intercepts, so the vertex is above the x-axis. Since the second differences are constant, the graph is a quadratic relation.