# Algebra I: Chapter 11 Test Review

Graph:

____ 1. $f(x) = \sqrt{x} - 1$

a.
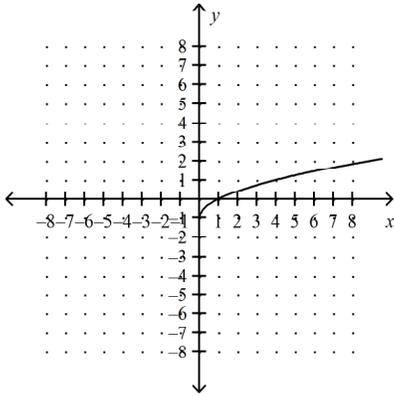
c.
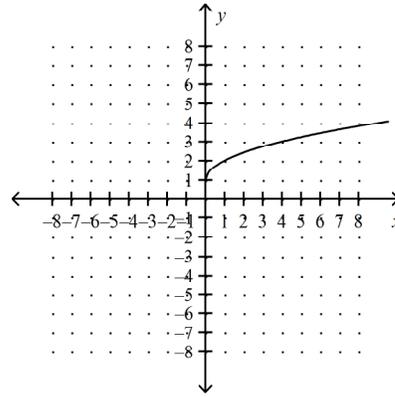

b.
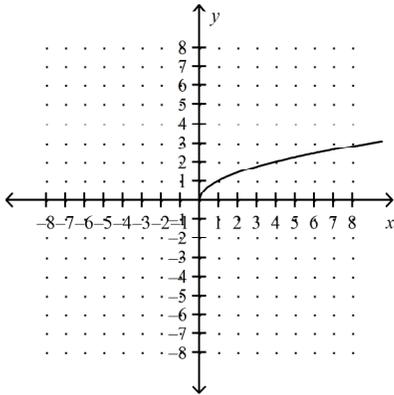
d.
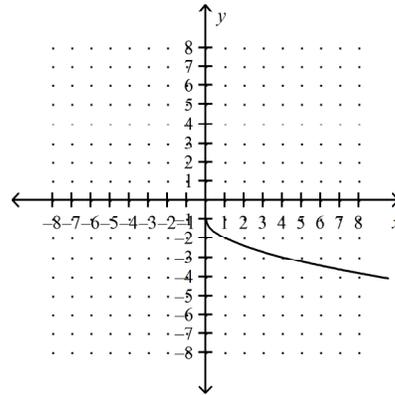
_____   2.   Graph the radical function $y = \sqrt{x-1}$ and then find the domain and range.

a.

Domain: $x \geq 1$; Range: $y \geq 0$

c.

Domain: $x \geq 0$; Range: $y \geq -1$

b.
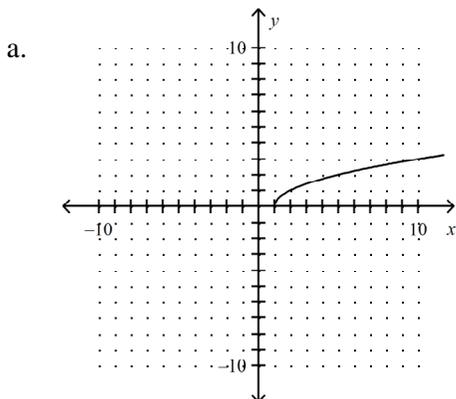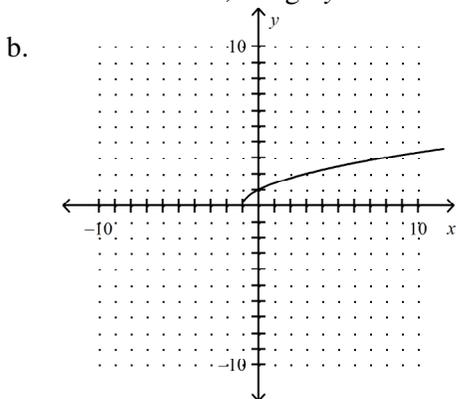
Domain: $x \geq -1$; Range: $y \geq 0$

d.
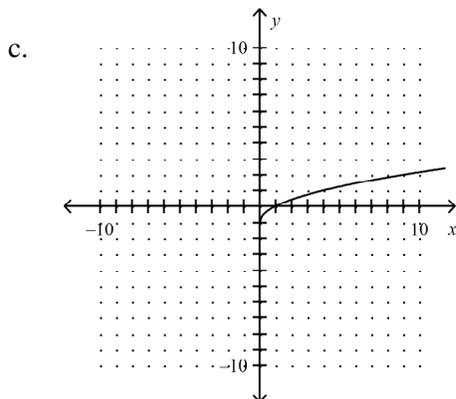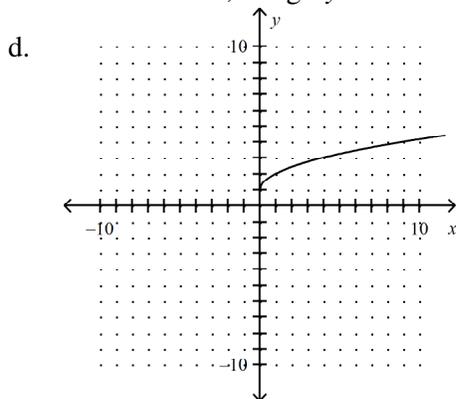
Domain: $x \geq 0$; Range: $y \geq 1$

____   3.   Which function matches the graph?
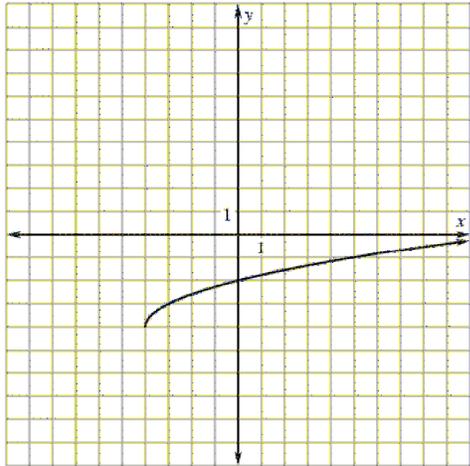
a. $f(x) = \sqrt{x+4} + 4$ c. $f(x) = \sqrt{x-4} - 4$

b. $f(x) = \sqrt{x-4} + 4$ d. $f(x) = \sqrt{x+4} - 4$

Simplify:

____   4. $\sqrt{300}$

a. $10\sqrt{30}$ b. $10\sqrt{3}$ c. $\sqrt{30}$ d. $3\sqrt{10}$

____   5. $\sqrt{200}$

a. $10\sqrt{2}$ b. $5\sqrt{2}$ c. $50\sqrt{2}$ d. $20\sqrt{2}$

Simplify:

____   6. $\sqrt{10} \cdot \sqrt{4}$

a. $2\sqrt{10}$ c. $2\sqrt{5}$

b. $4\sqrt{5}$ d. $\sqrt{40}$

____   7. $\sqrt{30} \cdot \sqrt{12}$

a. $9\sqrt{20}$ b. $12\sqrt{10}$ c. $6\sqrt{10}$ d. $3\sqrt{40}$

____   8. $11\sqrt{25}$

a.   137.5   b.   16   c.   55   d.   27.5

Simplify:

_____ 9. $\sqrt{\dfrac{49}{100}}$

    a. $\dfrac{7}{50}$ b. $\dfrac{3}{4}$ c. $\dfrac{7}{100}$ d. $\dfrac{7}{10}$

Simplify:

_____ 10. $7\sqrt{6}+8\sqrt{6}-3\sqrt{6}$

    a. $\sqrt{72}$ b. $12\sqrt{6}$ c. 72 d. $18\sqrt{6}$

_____ 11. $\sqrt{32}+\sqrt{72}$

    a. $2\sqrt{10}$ b. $46\sqrt{2}$ c. $\sqrt{104}$ d. $10\sqrt{2}$

_____ 12. $2\sqrt{6}-\sqrt{81}-4\sqrt{24}$

    a. $-6\sqrt{6}-9$ c. $-5\sqrt{24}$

    b. $-11\sqrt{6}-9-4\sqrt{24}$ d. $-15\sqrt{6}$

_____ 13. A certain gas will escape from a storage tank according to the formula $e = 120\sqrt{p}$, where e represents the amount escaping in gallons per minute, and p represents the pressure in pounds per square inch. How much gas is escaping when the pressure is 784 pounds per square inch? Round your answer to the nearest whole number.

    a. 3360 gal/min.   c. 58 gal/min.

    b. 47,040 gal/min.   d. 307 gal/min.

_____ 14. What is the simplified form of $2\sqrt{7}-\left(-8\sqrt{7}\right)-3\sqrt{7}$?

    a. $13\sqrt{7}$ b. 49 c. $7\sqrt{7}$ d. $\sqrt{49}$

_____ 15. A bridge over a stream in a garden is to be braced as shown in the figure below. The contractor determines that each of the identical braces must be $3\sqrt{2}$ feet long.
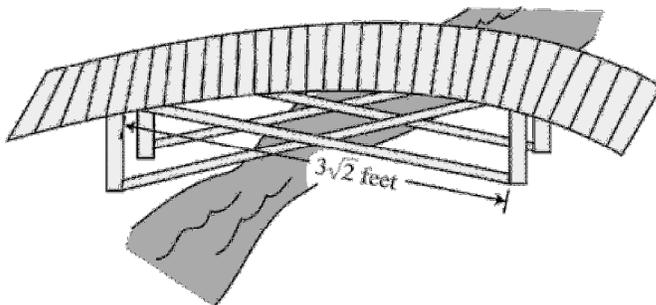
What is the approximate total length of all 4 braces?

    a. 8.5 feet   b. 17.0 feet   c. 24.0 feet   d. 9.8 feet

_____ 16. Simplify the expression $\sqrt{500}$.

     a. $50\sqrt{10}$ b. $10\sqrt{5}$ c. $5\sqrt{10}$ d. $10\sqrt{50}$

     17. **GRIDDED RESPONSE Grid the correct answer on a separate gridding sheet.**

One way to calculate the area of a square is to divide the square of the length of a diagonal by 2: $A = \dfrac{d^2}{2}$. What is the total area in square units of the two identical squares below if each diagonal is $\sqrt{5}$ units long?
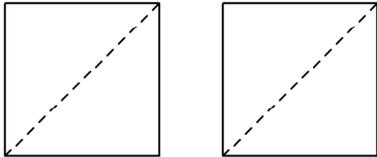

Solve:

_____ 18. $\sqrt{x+3} = -6$

     a.   33   c.   no real number solutions

     b.   33, -39   d.   -39

Solve:

_____ 19. $\sqrt{x+9} - 9 = 2$

     a.   112   b.   no solution   c. -68 d. -16

_____ 20. $\sqrt{6x+4} = 25$

     a. $\dfrac{207}{2}$ c. $\dfrac{207}{2}, \dfrac{209}{2}$

     b. $\dfrac{1}{6}$ d. $\dfrac{599}{6}$

_____ 21. $\sqrt{x+72} = x$

     a.   9   b.   no solution   c.   9, –8   d.   –8

_____ 22. The following equation describes the number of meters, x, which must be added to a string that measures 14 meters so that a pendulum will have a complete swing (back and forth) that lasts 8 seconds.

$\sqrt{14+x} = 3.9$

How much longer should the string be so that the complete swing of the pendulum will be 8 seconds?

     a.   1.21 m   b.   12 m   c.   10.1 m   d.   1.521 m

_____ 23. Jill and Eileen decided to take a shortcut through the woods to go to their friend's house. When they went home they decided to take the long way around the woods to avoid getting blackberry vine scratches. If the length of the shortcut is equal to the square root of the sum of the squares of the other two sides, what total distance did they walk?

Jill and Eileen

375 meters

shortcut

900 meters   Friend's
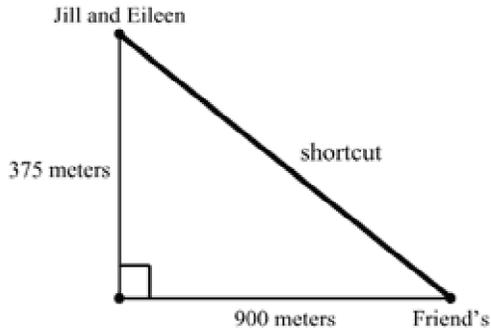
a.	1912 meters	c.	2550 meters
b.	3225 meters	d.	2250 meters

_____ 24. To get to the store from his house, Sam jogged 3 kilometers due west and then 4 kilometers due north. On the way back he cut across a field, taking the shortest possible route home.

Store

4 km

3 km   Home
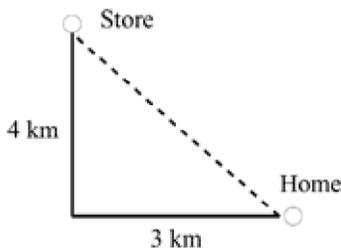
How far did Sam jog on the round-trip?

a.	14 km	b.	5 km	c.	12 km	d.	7 km

_____ 25. A cable 28 feet long runs from the top of a utility pole to a point on the ground 13 feet from the base of the pole. How tall is the utility pole?

a.	15 ft	b.	20 ft	c.	30.87 ft	d.	24.8 ft

_____ 26. Which set of side lengths *cannot* form a right triangle?

a.	64 mm, 118 mm, 136 mm	c.	48 mm, 90 mm, 102 mm
b.	16 mm, 30 mm, 34 mm	d.	$\frac{16}{5}$ mm, 6 mm, $\frac{34}{5}$ mm

_____ 27. A cable 39 m long runs from the top of a utility pole to a point on the ground 24 m from the base of the pole. How tall is the utility pole, to the nearest tenth of a meter?

a.	45.8 m	b.	945 m	c.	63 m	d.	30.7 m

_____ 28. Which is the approximate length of the hypotenuse of the right triangle?
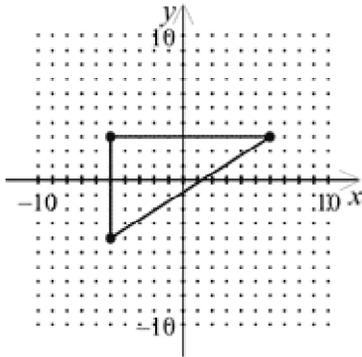
  a.   11.05   b.   7.07   c.   13.04   d.   1.41

_____ 29. Find the midpoint of $\overline{TU}$.
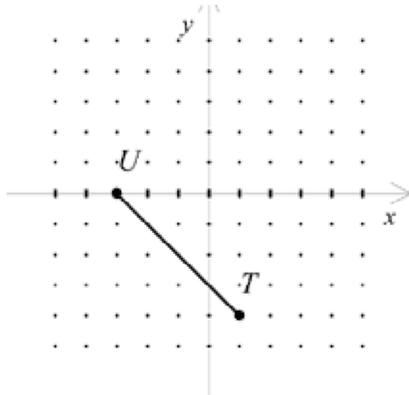
  a.   (−2, −1)   b.   (−1, −2)   c.   (1, 2)   d.   (2, 1)

_____ 30. Find the midpoint of (4, 16) and (9, –2).

  a. $(\frac{13}{2}, 7)$ c. $(10, \frac{7}{2})$

  b.   (13, 14)   d.   (−13, −14)

_____ 31. $M(0, -8)$ is the midpoint of $\overline{RS}$. If S has coordinates $(-2, -14)$, find the coordinates of R.

  a. $(2, -2)$ c. $(3, -2)$

  b. $(2, -6)$ d. $(3, -6)$

____ 32. The endpoints of a diameter of a circle are $C(-12, -4)$ and $D(-4, 2)$. What is the y-coordinate of the center of the circle?
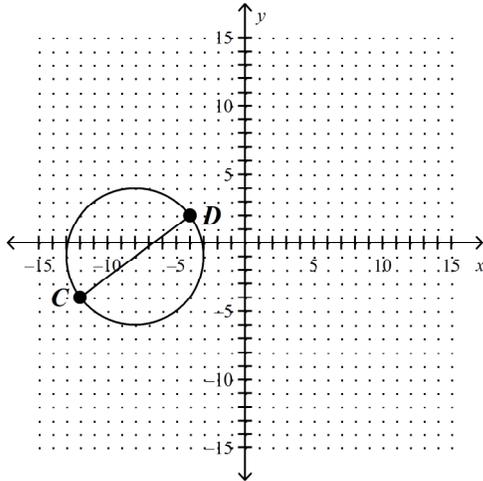
a. −1   c. 1
b. −8   d. 8

____ 33. Find the midpoint of the segment connecting $(5, -2)$ and $(2, -5)$.

a. $(3.5, -3.5)$ c. $(4.5, -3.5)$
b. $(-3.5, 3.5)$ d. $(-3, 4.5)$

____ 34. Name the coordinates of a point twice the distance from P as T.
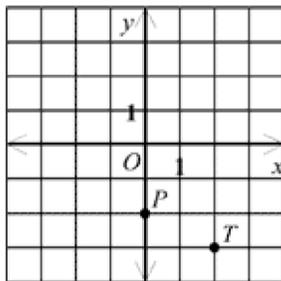
a. (0, –4)   b. (4, –4)   c. (1, –3)   d. (4, –2)

35. **GRIDDED RESPONSE Grid the correct answer on a separate gridding sheet.**

The line joining a vertex of a triangle to the midpoint of the opposite side is called a *median* of the triangle. What is the length of the median from vertex C to side $\overline{AB}$ in triangle ABC? Round the answer to the nearest tenth of a unit.
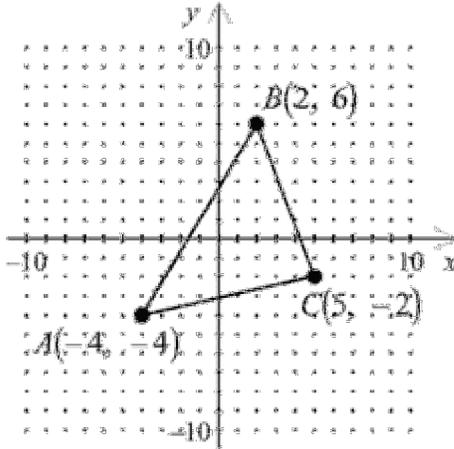
Algebra I: Chapter 11 Test Review
Answer Section

1. ANS: A   PTS: 1   DIF: Level B   REF: MALG1464
    STA: MI.MIGLC.MTH.05.8.A.RP.08.01
    TOP: Lesson 11.1 Graph Square Root Functions   KEY: radical | graph
    BLM: Comprehension   NOT: 978-0-618-65612-7
2. ANS: A   PTS: 1   DIF: Level B   REF: MALG1468
    STA: MI.MIGLC.MTH.05.8.A.RP.08.01
    TOP: Lesson 11.1 Graph Square Root Functions
    KEY: domain | range | radical equation | graph   BLM: Comprehension
    NOT: 978-0-618-65612-7
3. ANS: D   PTS: 1   DIF: Level B   REF: MALG1470
    STA: MI.MIGLC.MTH.06.9-12.A2.1.7 | MI.MIGLC.MTH.06.9-12.A2.3.1
    TOP: Lesson 11.1 Graph Square Root Functions   KEY: radical | graph
    BLM: Comprehension   NOT: 978-0-618-65612-7
4. ANS: B   PTS: 1   DIF: Level A   REF: MALG1475
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: radical | root | integer | simplify
    BLM: Knowledge   NOT: 978-0-618-65612-7
5. ANS: A   PTS: 1   DIF: Level A   REF: MALG1477
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: radical | root | integer | simplify
    BLM: Knowledge   NOT: 978-0-618-65612-7
6. ANS: A   PTS: 1   DIF: Level B   REF: MALG1479
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: radical | multiply | simplify
    BLM: Application   NOT: 978-0-618-65612-7
7. ANS: C   PTS: 1   DIF: Level B   REF: MALG1481
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: radical | multiply | simplify
    BLM: Application   NOT: 978-0-618-65612-7
8. ANS: C   PTS: 1   DIF: Level A   REF: MALG1483
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: radical | multiply | simplify
    BLM: Application   NOT: 978-0-618-65612-7
9. ANS: D   PTS: 1   DIF: Level A   REF: MALG1491
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: simplify | radical expression
    BLM: Knowledge   NOT: 978-0-618-65612-7
10. ANS: B   PTS: 1   DIF: Level A   REF: MALG1493
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: add | radical | subtract
    BLM: Application   NOT: 978-0-618-65612-7
11. ANS: D   PTS: 1   DIF: Level B   REF: MALG1495
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: add | radical
    BLM: Application   NOT: 978-0-618-65612-7
12. ANS: A   PTS: 1   DIF: Level B   REF: MALG1497
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: add | radical | subtract
    BLM: Application   NOT: 978-0-618-65612-7
13. ANS: A   PTS: 1   DIF: Level A   REF: MALG1502
    STA: MI.MIGLC.MTH.05.8.N.MR.08.10
    TOP: Lesson 11.2 Simplify Radical Expressions
    KEY: radical | square root | evaluate | real-life | formula   BLM: Application
    NOT: 978-0-618-65612-7

14. ANS: C   PTS: 1   DIF: Level A   REF: MALG1503
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: add | radical | subtract
    BLM: Application   NOT: 978-0-618-65612-7
15. ANS: B   PTS: 1   DIF: Level B   REF: MALG1504
    TOP: Lesson 11.2 Simplify Radical Expressions
    KEY: radical | square root | decimal | approximate | real-life   BLM: Application
    NOT: 978-0-618-65612-7
16. ANS: B   PTS: 1   DIF: Level B   REF: MALG1506
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: radical | square root | simplify
    BLM: Comprehension   NOT: 978-0-618-65612-7
17. ANS: 5

    PTS: 1   DIF: Level B   REF: MALG1507   STA: MI.MIGLC.MTH.06.9-12.L2.3.2
    TOP: Lesson 11.2 Simplify Radical Expressions   KEY: formula | square | area
    BLM: Application   NOT: 978-0-618-65612-7
18. ANS: C   PTS: 1   DIF: Level A   REF: MALG1508
    TOP: Lesson 11.3 Solve Radical Equations   KEY: radical | equation | solve
    BLM: Application   NOT: 978-0-618-65612-7
19. ANS: A   PTS: 1   DIF: Level B   REF: MALG1510
    TOP: Lesson 11.3 Solve Radical Equations   KEY: solve | equation | radical
    BLM: Application   NOT: 978-0-618-65612-7
20. ANS: A   PTS: 1   DIF: Level A   REF: MALG1512
    TOP: Lesson 11.3 Solve Radical Equations   KEY: solve | equation | radical
    BLM: Application   NOT: 978-0-618-65612-7
21. ANS: A   PTS: 1   DIF: Level B   REF: MALG1513
    TOP: Lesson 11.3 Solve Radical Equations   KEY: radical | solve | equation
    BLM: Application   NOT: 978-0-618-65612-7
22. ANS: A   PTS: 1   DIF: Level B   REF: MALG1521
    STA: MI.MIGLC.MTH.05.8.N.MR.08.10 | MI.MIGLC.MTH.06.9-12.A1.2.6
    TOP: Lesson 11.3 Solve Radical Equations   KEY: solve | radical | equation | real-life
    BLM: Application   NOT: 978-0-618-65612-7
23. ANS: D   PTS: 1   DIF: Level B   REF: MALG1527
    STA: MI.MIGLC.MTH.05.8.N.MR.08.10 | MI.MIGLC.MTH.05.8.G.GS.08.01 |
    MI.MIGLC.MTH.05.8.G.LO.08.02 | MI.MIGLC.MTH.06.9-12.L1.1.6 | MI.MIGLC.MTH.06.9-12.G1.2.3 |
    MI.MIGLC.MTH.06.9-12.G1.3.1
    TOP: Lesson 11.4 Apply the Pythagorean Theorem and Its Converse
    KEY: real-life | Pythagorean Theorem   BLM: Application   NOT: 978-0-618-65612-7
24. ANS: C   PTS: 1   DIF: Level A   REF: MALG1528
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    MI.MIGLC.MTH.05.8.G.LO.08.02 | MI.MIGLC.MTH.05.8.G.SR.08.04 | MI.MIGLC.MTH.06.9-12.L1.1.6 |
    MI.MIGLC.MTH.06.9-12.G1.2.2 | MI.MIGLC.MTH.06.9-12.G1.2.3 | MI.MIGLC.MTH.06.9-12.G1.3.1
    TOP: Lesson 11.4 Apply the Pythagorean Theorem and Its Converse
    KEY: Pythagorean Theorem | real-life   BLM: Application   NOT: 978-0-618-65612-7

25. ANS: D   PTS: 1   DIF: Level B   REF: MALG1531
    STA: MI.MIGLC.MTH.05.8.N.MR.08.10 | MI.MIGLC.MTH.05.8.G.GS.08.01 |
    MI.MIGLC.MTH.05.8.G.LO.08.02 | MI.MIGLC.MTH.06.9-12.L1.1.6 | MI.MIGLC.MTH.06.9-12.G1.2.3 |
    MI.MIGLC.MTH.06.9-12.G1.3.1
    TOP: Lesson 11.4 Apply the Pythagorean Theorem and Its Converse
    KEY: real-life | Pythagorean Theorem   BLM: Application   NOT: 978-0-618-65612-7
26. ANS: A   PTS: 1   DIF: Level B   REF: MALG1532
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    MI.MIGLC.MTH.06.9-12.G1.3.1
    TOP: Lesson 11.4 Apply the Pythagorean Theorem and Its Converse
    KEY: Pythagorean triple   BLM: Analysis   NOT: 978-0-618-65612-7
27. ANS: D   PTS: 1   DIF: Level B   REF: MALG1536
    STA: MI.MIGLC.MTH.05.8.N.MR.08.10 | MI.MIGLC.MTH.05.8.G.GS.08.01 |
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    MI.MIGLC.MTH.06.9-12.G1.3.1
    TOP: Lesson 11.4 Apply the Pythagorean Theorem and Its Converse
    KEY: real-life | Pythagorean Theorem   BLM: Application   NOT: 978-0-618-65612-7
28. ANS: C   PTS: 1   DIF: Level C   REF: MALG1539
    STA: MI.MIGLC.MTH.05.8.G.GS.08.01 | MI.MIGLC.MTH.05.8.G.LO.08.02 |
    MI.MIGLC.MTH.06.9-12.L1.1.6 | MI.MIGLC.MTH.06.9-12.G1.2.3 | MI.MIGLC.MTH.06.9-12.G1.3.1
    TOP: Lesson 11.4 Apply the Pythagorean Theorem and Its Converse
    KEY: length | Pythagorean Theorem | hypotenuse   BLM: Application
    NOT: 978-0-618-65612-7
29. ANS: B   PTS: 1   DIF: Level A   REF: MALG1548
    STA: MI.MIGLC.MTH.06.9-12.A1.2.9 | MI.MIGLC.MTH.06.9-12.G1.1.5 |
    MI.MIGLC.MTH.06.9-12.G1.4.2   TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: segment | midpoint formula | coordinate geometry   BLM: Knowledge
    NOT: 978-0-618-65612-7
30. ANS: A   PTS: 1   DIF: Level A   REF: MALG1549
    STA: MI.MIGLC.MTH.06.9-12.A1.2.9 | MI.MIGLC.MTH.06.9-12.G1.1.5 |
    MI.MIGLC.MTH.06.9-12.G1.4.2   TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: midpoint formula | coordinate geometry   BLM: Knowledge
    NOT: 978-0-618-65612-7
31. ANS: A   PTS: 1   DIF: Level B   REF: MALG1555
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    TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: endpoint | coordinates | midpoint formula   BLM: Application
    NOT: 978-0-618-65612-7
32. ANS: A   PTS: 1   DIF: Level B   REF: MALG1558
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    TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: midpoint formula | coordinate geometry | circle | center   BLM: Application
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33. ANS: A   PTS: 1   DIF: Level A   REF: MALG1561
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    MI.MIGLC.MTH.06.9-12.G1.4.2   TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: segment | midpoint formula | coordinate geometry   BLM: Knowledge
    NOT: 978-0-618-65612-7
34. ANS: B   PTS: 1   DIF: Level C   REF: MALG1562
    STA: MI.MIGLC.MTH.05.8.G.LO.08.02 | MI.MIGLC.MTH.06.9-12.A1.2.9 |
    MI.MIGLC.MTH.06.9-12.G1.1.5 | MI.MIGLC.MTH.06.9-12.G1.4.2 | MI.MIGLC.MTH.06.9-12.G2.3.4
    TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: distance formula | coordinate geometry   BLM: Analysis
    NOT: 978-0-618-65612-7
35. ANS: 6.7

    PTS: 1   DIF: Level C   REF: MALG1560
    STA: MI.MIGLC.MTH.05.8.G.LO.08.02 | MI.MIGLC.MTH.06.9-12.L2.3.2 |
    MI.MIGLC.MTH.06.9-12.A1.2.9 | MI.MIGLC.MTH.06.9-12.G1.1.5 | MI.MIGLC.MTH.06.9-12.G1.4.2 |
    MI.MIGLC.MTH.06.9-12.G2.3.4   TOP: Lesson 11.5 Apply the Distance and Midpoint Formulas
    KEY: distance formula | triangle | midpoint formula | coordinate geometry
    BLM: Application   NOT: 978-0-618-65612-7