Math 9 – Practice Exam Q's

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1. Determine the value of $\sqrt{0.36}$.
    a. 0.3   b. 0.06   c. 0.12   d. 0.6

_____ 2. Calculate the number whose square root is 0.9.
    a. 0.81   b. 0.0081   c. 0.081   d. 0.09

_____ 3. Which fraction is a perfect square?
    i) $\dfrac{49}{60}$

    ii) $\dfrac{49}{225}$

    iii) $\dfrac{28}{225}$

    iv) $\dfrac{7}{15}$

    a. ii   b. iii   c. iv   d. i

_____ 4. Determine the value of $\sqrt{\dfrac{32}{50}}$.
    a. $\dfrac{4}{5}$ b. $\dfrac{16}{25}$ c. $\dfrac{4}{10}$ d. $\dfrac{8}{5}$

_____ 5. A square has an area of 27.8 cm².
Determine the side length of the square, to the nearest millimetre.
    a. 5 cm   b. 5.2 cm   c. 5.27 cm   d. 5.3 cm

_____ 6. The lengths of the two legs of a right triangle are 6.5 cm and 3.4 cm.
Determine the length of the hypotenuse to 1 decimal place.
    a. 53.8 cm   b. 7.3 cm   c. 5.5 cm   d. 3.1 cm

_____ 7. This composite object is made using centimetre cubes. Determine its surface area.

    a. 24 cm²   b. 20 cm²   c. 15 cm²   d. 18 cm²

_____ 8. This composite object is made of a 20-cm cube on top of a 40-cm cube.
Determine its surface area.

20 cm

40 cm

    a. 11 200 cm²   b. 11 600 cm²   c. 10 000 cm²   d. 12 000 cm²
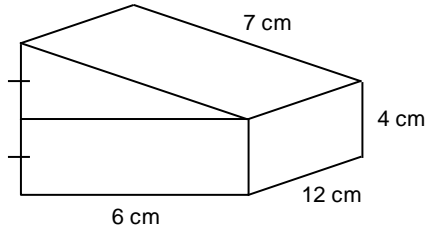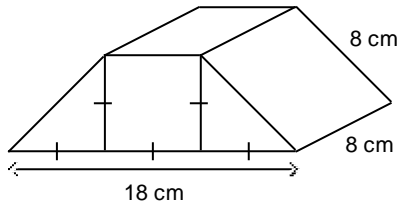
____ 9. This object is composed of a right triangular prism on top of a right rectangular prism. Determine the surface area of the object.

    a.   300 cm²   b.   372 cm²   c.   444 cm²   d.   204 cm²

____ 10. This object is composed of two right triangular prisms and a right rectangular prism. Determine the surface area of the object.

    a.   320 cm²   b.   608 cm²   c.   464 cm²   d.   392 cm²

____ 11. This object is composed of a cylinder of diameter 8 cm and height 14 cm on top of another cylinder of diameter 12 cm and height 6 cm.
Determine the surface area of the object, to the nearest square centimetre.
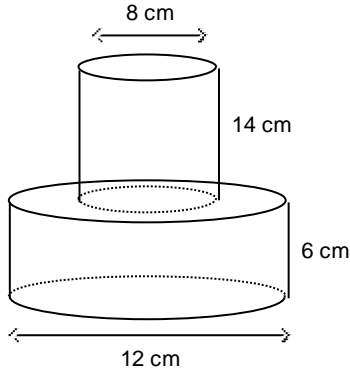
    a.   691 cm²   b.   820 cm²   c.   836 cm²   d.   804 cm²

____ 12. Each layer of a two-layer cake is a right rectangular prism.
The bottom layer has a square base of side length 26 cm and height 8 cm.
The top layer has a square base of side length 18 cm and height 6 cm.
The surface of the cake is frosted. What area of the cake is frosted?
    a.   2616 cm²   b.   2264 cm²   c.   1940 cm²   d.   2588 cm²

____ 13. Which numbers are rational numbers?
$\frac{2}{11}$, 3.6, $0.8\dot{3}$, $\frac{11}{2}$

    a. $\frac{2}{11}$ and 3.6   c.   All of them

    b. $\frac{2}{11}$ and $\frac{11}{2}$ d. $\frac{2}{11}$, 3.6, and $\frac{11}{2}$

_____ 14. Identify equal rational numbers in this list:

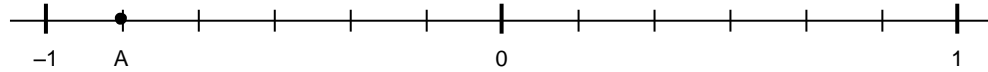$$\frac{-3}{-4}, \frac{-3}{4}, -\frac{4}{3}, \frac{3}{-4}, -\frac{3}{4}$$

a. $-\frac{4}{3}$ and $\frac{3}{-4}$

b. $\frac{-3}{4}, \frac{3}{-4},$ and $-\frac{3}{4}$

c. $\frac{-3}{4}, -\frac{4}{3},$ and $-\frac{3}{4}$

d. $\frac{-3}{-4}$ and $-\frac{4}{3}$

_____ 15. Which rational number is represented by the letter A on the number line?

a. −0.5

b. −0.8

c. $-\frac{5}{\,}$

d. $-\frac{5}{6}$

_____ 16. Identify the greatest rational number.

$$-\frac{9}{14}, \frac{5}{7}, -\frac{3}{4}, \frac{5}{8}$$

a. $\frac{5}{7}$

b. $\frac{5}{8}$

c. $-\frac{9}{14}$

d. $-\frac{3}{4}$

_____ 17. Which of these numbers are between $\frac{4}{6}$ and $\frac{7}{5}$?

$$\frac{5}{6}, \frac{1}{5}, \frac{7}{8}, \frac{4}{5}$$

a. $\frac{5}{6}$ and $\frac{7}{8}$

b. $\frac{5}{6}, \frac{7}{8},$ and $\frac{4}{5}$

c. $\frac{1}{5}$ and $\frac{7}{8}$

d. $\frac{5}{6}$ and $\frac{4}{5}$

_____ 18. Evaluate.
$3.4 - (-1.4) \times (0.9)$

a. 4.32

b. 1.8

c. 2.14

d. 4.66

_____ 19. Evaluate.

$$\frac{5}{6} \div \left(\frac{4}{3} + \frac{1}{6} \right)$$

a. $\frac{25}{54}$

b. $\frac{8}{15}$

c. $\frac{5}{9}$

d. $\frac{19}{24}$

_____ 20. Evaluate.

$$\frac{5}{6} - \frac{2}{3} \times \frac{3}{4} + \frac{5}{6}$$

a. −4

b. $-\frac{1}{72}$

c. $\frac{7}{6}$

d. $\frac{5}{7}$

_____ 21. Calculate the side length, in units, in this proportion: $\frac{PQ}{8} = \frac{5}{160}$

a. 0.08

b. 1.43

c. 4

d. 0.25

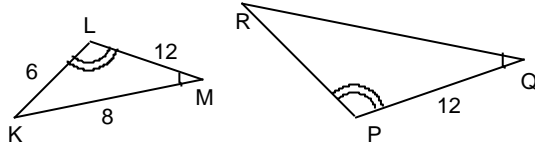_____ 22. Calculate the value of x in this proportion: $\frac{x}{4.5} = \frac{13.5}{18}$
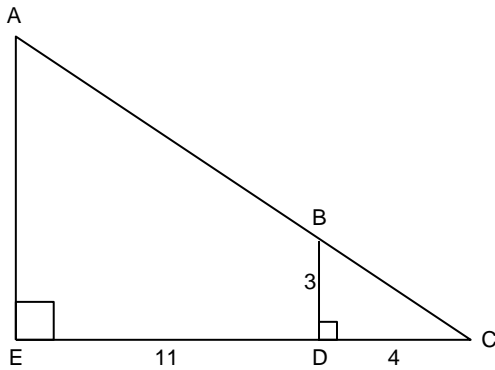
a. 3.375

b. 0.6

c. 1

d. 0.75

_____ 23. These triangles are similar. Determine the length of QR to the nearest tenth.

a. 16 b. 24 c. 5.3 d. 8

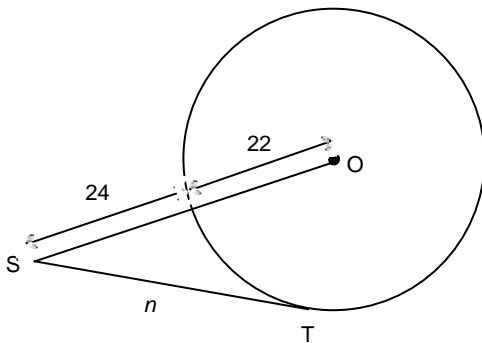_____ 24. Determine the length of AE in this pair of similar triangles.

a. 11.25 b. 10 c. 14.6 d. 13

_____ 25. When the shadow of a flagpole is 31.2 m long, a 1.6-m fencepost casts a shadow 2.6 m long. How tall is the flagpole?
a. 50.7 m b. 12.6 m c. 21.2 m d. 19.2 m

_____ 26. O is the centre of this circle and point T is a point of tangency.
Determine the value of n. If necessary, give your answer to the nearest tenth.
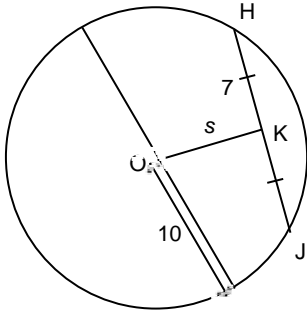

a. 5.7 b. 51 c. 24 d. 40.4

_____ 27. A circle has radius 8 cm. Which of the following measures could NOT be the length of a chord in the circle: 3 cm, 13 cm, 16 cm, or 19 cm?
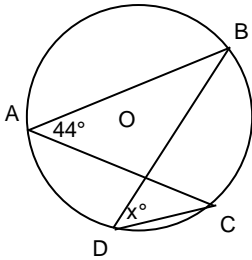a. 13 cm c. 19 cm
b. 16 cm d. 3 cm

____ 28. O is the centre of the circle.
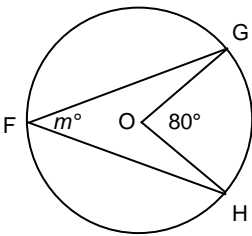Determine the value of s to the nearest tenth, if necessary.

a. 3 b. 7.1 c. 12.2 d. 51

____ 29. O is the centre of this circle.
Determine the value of $x°$.

a. 44° c. 180°
b. 90° d. 88°

____ 30. O is the centre of this circle.
Determine the value of $m°$.

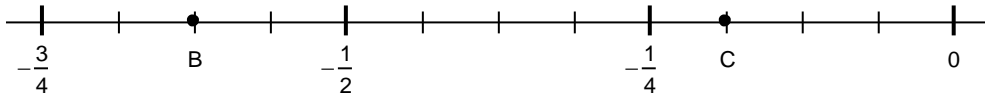a. 90° c. 180°
b. 80° d. 40°

Short Answer

31. Determine the value of $\sqrt{\dfrac{289}{361}}$.

32. A square garden has an area of 156.25 m^2.
    a) Determine the length of one side of the garden.
    b) Determine the perimeter of the garden.

33. Approximate $\sqrt{\dfrac{19}{14}}$ to the nearest tenth.

34. Write the rational number represented by each letter on the number line, as a fraction.

35. Which rational number is less?

$$-\frac{4}{7}, \ -\frac{5}{2}$$

36. Insert $<$, $>$, or $=$ to make each expression true.

a) $-\frac{18}{5} \ \square \ -\frac{11}{3}$

b) $3\frac{3}{5} \ \square \ 3\frac{7}{12}$

37. Evaluate.

$$\frac{2}{3} - \left(-\frac{7}{12}\right)\left(-\frac{4}{21}\right)$$

38. Evaluate.

$$1\frac{7}{8} \times 2\frac{2}{5} - 1\frac{3}{4}$$

39. Evaluate.

$$\left[\frac{2}{3} + \frac{1}{4}\right] \div \left[\left(-\frac{5}{6}\right) \times \frac{8}{15}\right]$$
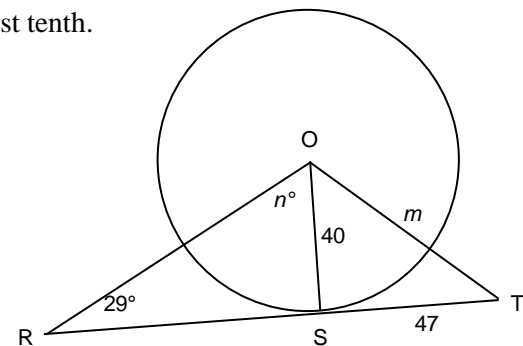
40. Evaluate.

$$25.4 - 6.5 \times (8.7 - 4.7)$$

41. Evaluate: $\left[\frac{5}{7} \times \left(-\frac{9}{10}\right)\right] \div \left(-\frac{6}{7}\right)$

42. When the shadow of an electrical tower is 9.9 m long, a 3.5-m lamp post casts a shadow 5.5 m long. How tall is the electrical tower?
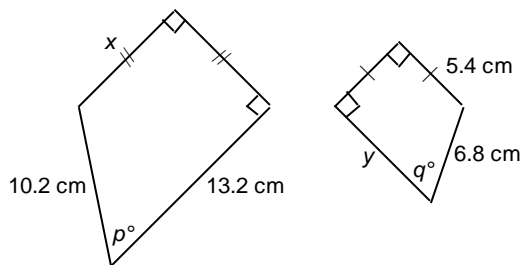
43. O is the centre of this circle and point S is a point of tangency.
Determine the values of m and $n°$. If necessary, give your answers to the nearest tenth.

Problem

44. These quadrilaterals are similar.

a) Determine the values of x and y.
b) If $p° = 62°$, determine the value of $q°$.

Answer Section

MULTIPLE CHOICE

1. ANS: D   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
2. ANS: A   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
3. ANS: A   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Conceptual Understanding
4. ANS: A   PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
5. ANS: D   PTS: 1   DIF: Moderate
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Procedural Knowledge
6. ANS: B   PTS: 1   DIF: Moderate
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Procedural Knowledge
7. ANS: D   PTS: 1   DIF: Easy
    REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
    LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
8. ANS: A   PTS: 1   DIF: Moderate
    REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
    LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
9. ANS: B   PTS: 1   DIF: Easy
    REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
    TOP: Shape and Space (3-D Objects and 2-D Shapes)   KEY: Procedural Knowledge
10. ANS: C   PTS: 1   DIF: Easy
    REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
    TOP: Shape and Space (3-D Objects and 2-D Shapes)   KEY: Procedural Knowledge
11. ANS: D   PTS: 1   DIF: Easy
    REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
    TOP: Shape and Space (3-D Objects and 2-D Shapes)   KEY: Procedural Knowledge
12. ANS: C   PTS: 1   DIF: Easy
    REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
    TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge | Problem-Solving Skills
13. ANS: C   PTS: 1   DIF: Easy   REF: 3.1 What Is a Rational Number?
    LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding
14. ANS: B   PTS: 1   DIF: Easy   REF: 3.1 What Is a Rational Number?
    LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding
15. ANS: D   PTS: 1   DIF: Easy   REF: 3.1 What Is a Rational Number?
    LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding
16. ANS: A   PTS: 1   DIF: Moderate   REF: 3.1 What Is a Rational Number?
    LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding | Procedural Knowledge
17. ANS: B   PTS: 1   DIF: Moderate   REF: 3.1 What Is a Rational Number?
    LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding | Procedural Knowledge
18. ANS: D   PTS: 1   DIF: Easy
    REF: 3.6 Order of Operations with Rational Numbers   LOC: 9.N4

TOP: Number   KEY: Procedural Knowledge

19. ANS: C   PTS: 1   DIF: Moderate
REF: 3.6 Order of Operations with Rational Numbers   LOC: 9.N4
TOP: Number   KEY: Procedural Knowledge

20. ANS: C   PTS: 1   DIF: Moderate
REF: 3.6 Order of Operations with Rational Numbers   LOC: 9.N4
TOP: Number   KEY: Procedural Knowledge

21. ANS: D   PTS: 1   DIF: Easy   REF: 7.3 Similar Polygons
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge

22. ANS: A   PTS: 1   DIF: Easy   REF: 7.3 Similar Polygons
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge

23. ANS: D   PTS: 1   DIF: Easy   REF: 7.4 Similar Triangles
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge

24. ANS: A   PTS: 1   DIF: Moderate   REF: 7.4 Similar Triangles
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge

25. ANS: D   PTS: 1   DIF: Moderate   REF: 7.4 Similar Triangles
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge

26. ANS: D   PTS: 1   DIF: Moderate
REF: 8.1 Properties of Tangents to a Circle   LOC: 9.SS1
TOP: Shape and Space (Measurement)   KEY: Conceptual Understanding

27. ANS: C   PTS: 1   DIF: Easy   REF: 8.2 Properties of Chords in a Circle
LOC: 9.SS1   TOP: Shape and Space (Measurement)   KEY: Conceptual Understanding

28. ANS: B   PTS: 1   DIF: Moderate   REF: 8.2 Properties of Chords in a Circle
LOC: 9.SS1   TOP: Shape and Space (Measurement)   KEY: Conceptual Understanding

29. ANS: A   PTS: 1   DIF: Easy   REF: 8.3 Properties of Angles in a Circle
LOC: 9.SS1   TOP: Shape and Space (Measurement)   KEY: Conceptual Understanding

30. ANS: D   PTS: 1   DIF: Easy   REF: 8.3 Properties of Angles in a Circle
LOC: 9.SS1   TOP: Shape and Space (Measurement)   KEY: Conceptual Understanding

SHORT ANSWER

31. ANS:

$$\frac{17}{19}$$

PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

32. ANS:
a) The length of one side of the garden is $\sqrt{156.25}$ m, or 12.5 m.
b) The perimeter of the garden is 4×12.5 m, or 50 m.

PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

33. ANS:

$$\sqrt{\frac{19}{14}} \doteq 1.2$$

PTS: 1   DIF: Easy   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

34. ANS:

$$B: -\frac{5}{8}, \ C: -\frac{3}{16}$$

PTS: 1   DIF: Easy   REF: 3.1 What Is a Rational Number?
LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding

35. ANS:

$$-\frac{5}{2}$$

PTS: 1   DIF: Moderate   REF: 3.1 What Is a Rational Number?
LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding

36. ANS:

a) $-\dfrac{18}{5} > -\dfrac{11}{3}$

b) $3\dfrac{3}{5} > 3\dfrac{7}{12}$

PTS: 1   DIF: Moderate   REF: 3.1 What Is a Rational Number?
LOC: 9.N3   TOP: Number   KEY: Conceptual Understanding | Procedural Knowledge

37. ANS:

$$\frac{5}{9}$$

PTS: 1   DIF: Easy   REF: 3.6 Order of Operations with Rational Numbers
LOC: 9.N4   TOP: Number   KEY: Procedural Knowledge

38. ANS:

$$2\frac{3}{4}$$

PTS: 1   DIF: Easy   REF: 3.6 Order of Operations with Rational Numbers
LOC: 9.N4   TOP: Number   KEY: Procedural Knowledge

39. ANS:

$$-\frac{33}{16}, \text{ or } -2\frac{1}{16}$$

PTS: 1   DIF: Moderate   REF: 3.6 Order of Operations with Rational Numbers
LOC: 9.N4   TOP: Number   KEY: Procedural Knowledge

40. ANS:
−0.6

PTS: 1   DIF: Moderate   REF: 3.6 Order of Operations with Rational Numbers
LOC: 9.N4   TOP: Number   KEY: Procedural Knowledge

41. ANS:

$$\frac{3}{4}$$

PTS: 1   DIF: Difficult   REF: 3.6 Order of Operations with Rational Numbers
LOC: 9.N3   TOP: Number   KEY: Procedural Knowledge

42. ANS:
6.3 m

PTS: 1   DIF: Moderate   REF: 7.4 Similar Triangles
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge

43. ANS:
$m = 61.7, n° = 61°$

PTS: 1   DIF: Moderate   REF: 8.1 Properties of Tangents to a Circle
LOC: 9.SS1   TOP: Shape and Space (Measurement)   KEY: Conceptual Understanding

PROBLEM

44. ANS:
a)

$$\frac{x}{5.4} = \frac{10.2}{6.8}$$

$$5.4 \times \frac{x}{5.4} = 5.4 \times \frac{10.2}{6.8}$$

$$x = \frac{5.4 \times 10.2}{6.8}$$

$$x = 8.1$$

So, $x = 8.1$ cm.

$$\frac{y}{13.2} = \frac{6.8}{10.2}$$

$$13.2 \times \frac{y}{13.2} = 13.2 \times \frac{6.8}{10.2}$$

$$y = \frac{13.2 \times 6.8}{10.2}$$

$$y = 8.8$$

So, $y = 8.8$ cm.

b) Since corresponding angles in similar polygons are equal, $q° = 62°$.

PTS: 1   DIF: Moderate   REF: 7.3 Similar Polygons
LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Conceptual Understanding | Procedural Knowledge