

[Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_]

## CRCT Review Guide      CCGPS Math 7<sup>th</sup> Grade— Geometry

**\*\*SHOW ALL WORK TO RECEIVE CREDIT\*\***

Below are formulas you may find useful as you work the problems. However, some of the formulas may not be used. You may refer to this page as you complete the Study Guide.

### Circumference

$$C = \pi d \text{ or } C = 2\pi r \quad \pi = 3.14$$

### Area

Rectangle  $A = bh$  or  $A = lw$

Triangle  $A = \frac{1}{2}bh$

Circle  $A = \pi r^2$

### Pythagorean Theorem

$$a^2 + b^2 = c^2$$

### Mean

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$$

### Mean Absolute Deviation

$$\frac{\text{Total Distance (of all values from the mean value)}}{\text{Number of values}}$$

**Interquartile Range:** the difference between the first quartile and third quartile of a set of data

### Volume

Rectangular Prism Volume = (area of base)  $\times$  (height) or  $V = lwh$

Cylinder Volume = (area of base)  $\times$  (height)

Sphere  $V = \frac{4}{3}\pi r^3$

Cone  $V = \frac{1}{3}Bh$

**Draw, construct, and describe geometrical figures and describe the relationships between them.**

**MCC7.G.1** *Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.*

1. The scale of a map is  $1\frac{1}{4}$  inches = 100 miles. On that map, two cities are  $4\frac{1}{8}$  inches apart. What is the actual distance between the cities?

a) 275 mi

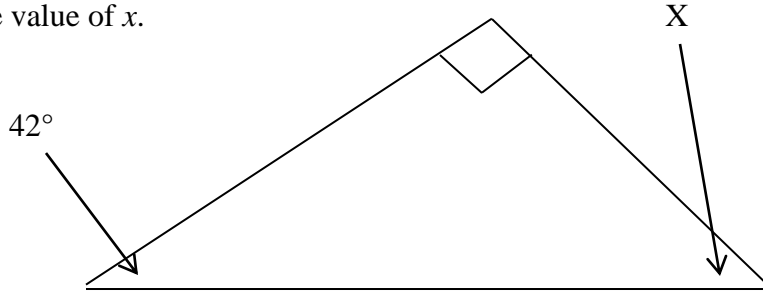
b) 330 mi

c) 375 mi

d) 412.5 mi

MCC7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

2. Find the value of  $x$ .



- a)  $18^\circ$                       b)  $90^\circ$                       c)  $36^\circ$                       d)  $48^\circ$

3. Which best describes a triangle with side lengths of 5 centimeters, 12 centimeters, and 13 centimeters?

- a. unique triangle              b) no triangle              c) multiple triangles              d) nonexistent

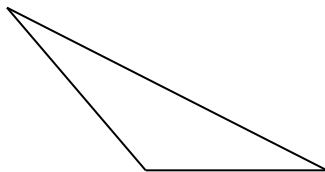
4. Linda constructs a triangle with one side 5 inches long and another side 7 inches long. Which is **NOT** a possible length for the third side?

- a) 3 inches              b) 6 inches              c) 11 inches              d) 12 inches

5. Charmaine constructs a triangle with angles measuring  $65^\circ$  and  $38^\circ$ . What must be true of the measure of the third angle in her construction?

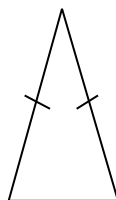
- a) It must measure exactly  $77^\circ$ .              b) It must measure exactly  $87^\circ$ .              c) It can have any measures less than  $103^\circ$ .              d) It can have any measure greater than  $27^\circ$ .

6. Classify the following triangle according to its angles.



- a) acute              b) isosceles              c) obtuse              d) equilateral

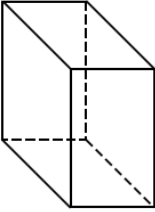
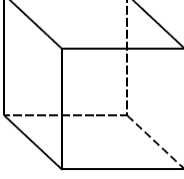
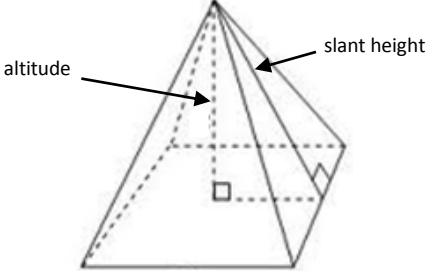
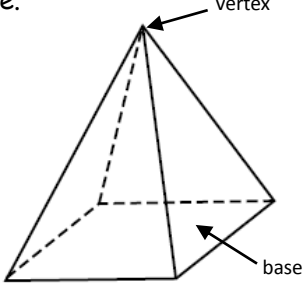
7. Classify the following triangle according to its sides.



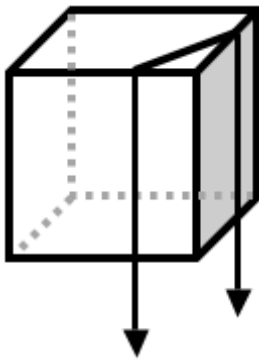
- a) scalene              b) equilateral              c) obtuse              d) isosceles

**MCC7.G.3** Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

A **three-dimensional figure** (also called a **solid figure**) has length, width, and height. It is not flat. Some examples of three-dimensional figures are below.

<p>A prism has a pair of bases that are parallel, congruent polygons. Its other faces are rectangles.</p>	<p>A <b>rectangular prism</b> has 6 faces that are rectangles.</p> 	<p>A <b>cube</b> is a rectangular prism with 6 square faces.</p> 
<p>A <b>pyramid</b> has one base that is a polygon. Its other faces are triangles. The height of a pyramid is called its <b>altitude</b>, and the height of its lateral face is called its <b>slant height</b>.</p>	<p>A <b>rectangular pyramid</b> has a base that is a rectangle.</p> 	<p>A <b>square pyramid</b> has a base that is a square.</p> 

8. The rectangular prism shown is cut by a plane that is vertical to the rectangular base. What shape is the cross-section?



- a) circle                      b) rectangle                      c) trapezoid                      d) triangle

9. Which is the shape of the cross section formed when the square pyramid is sliced by a plane perpendicular (vertically) to its base that does not pass through its top vertex?

- a) Parallelogram (not a square)      b) square      c) trapezoid      d) triangle

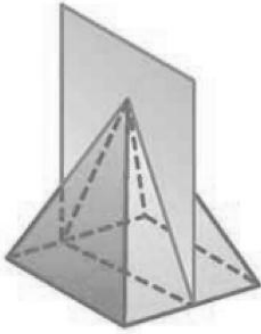
10. What is NOT a possible cross section that can be formed when a rectangular pyramid is intersected by a plane?

- a) circle                      b) trapezoid                      c) rectangle                      d) triangle

11. What is the shape of the cross section formed when a rectangular prism is sliced by a plane parallel (horizontally) to its base?

- a) circle                      b) oval                      c) rectangle                      d) square

12. The pyramid shown is cut by a plane that is vertical to the rectangular base. What shape is the cross-section?



- a. circle                      b) rectangle                      c) trapezoid                      d) triangle

**MCC7.G.4** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

13. A rose garden is circular. The diameter of the garden is 20 feet. Which is closest to the total area of the garden.

- a.  $56.52 \text{ ft}^2$                       b)  $63.59 \text{ ft}^2$                       c)  $314 \text{ ft}^2$                       d)  $113.04 \text{ ft}^2$

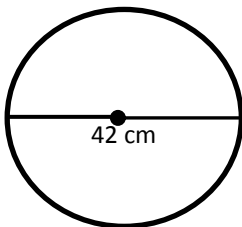
14. A circular swimming pool has a radius of 20 feet. The family that owns the pool wants to put up a circular fence that is 5 feet away from the pool at all points. Which is closest to the circumference of the fence they will need?

- a. 94.2 ft                      b) 75.5 ft                      c) 157 ft                      d) 188.4 ft

15. You want to buy wheel covers for your bike to cut down wind resistance in order to go faster on your next race. Your bike has wheels with a circumference of 94.2 in. Find the number of square inches needed to cover the wheel.

- a.  $12.5 \text{ in}^2$                       b)  $156.25 \text{ in}^2$                       c)  $490.62 \text{ in}^2$                       d)  $706.50 \text{ in}^2$

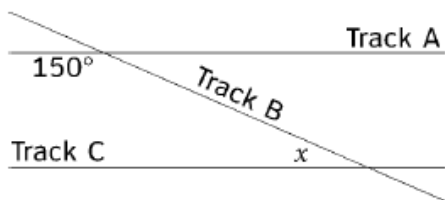
16. What is the circumference of the circle below?



- a) 210 cm                      b) 66 cm                      c) 131.88 cm                      d) 181 cm

**MCC7.G.5** Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

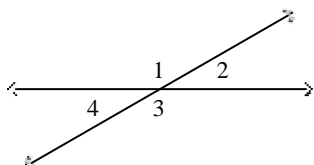
17. At a train station, Track B crosses Track A and Track C, which are parallel to each other. Track A and Track B intersect at an angle of  $150^\circ$  as shown.



What is the  $m\angle x$ ?

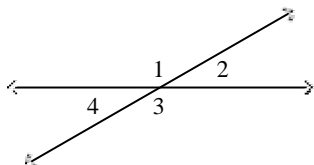
- a)  $30^\circ$       b)  $50^\circ$       c)  $150^\circ$       d)  $180^\circ$

18. In the figure,  $\angle 1$  and  $\angle 3$  are vertical angles, and  $\angle 2$  and  $\angle 4$  are vertical angles. If  $m\angle 1 = n^\circ$ , find the  $m\angle 3$ .



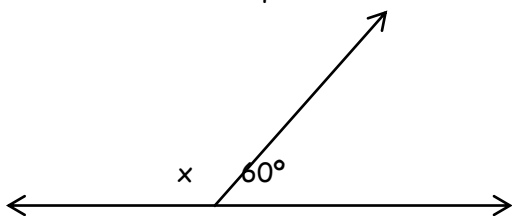
- a)  $180^\circ - n^\circ$       b)  $90^\circ + n^\circ$       c)  $n^\circ$       d)  $90^\circ - n^\circ$

19. In the figure,  $\angle 1$  and  $\angle 4$  are supplementary angles. If  $m\angle 4 = 60^\circ$ , find the  $m\angle 1$ .



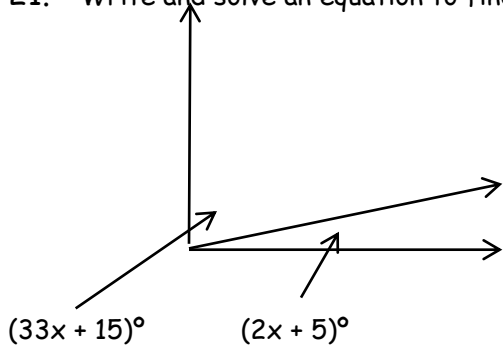
- a)  $90^\circ$       b)  $150^\circ$       c)  $30^\circ$       d)  $120^\circ$

20. Write and solve an equation to find the measure of angle  $x$ .



- a)  $110^\circ$       b)  $120^\circ$       c)  $70^\circ$       d)  $150^\circ$

21. Write and solve an equation to find the measure of the complementary angles

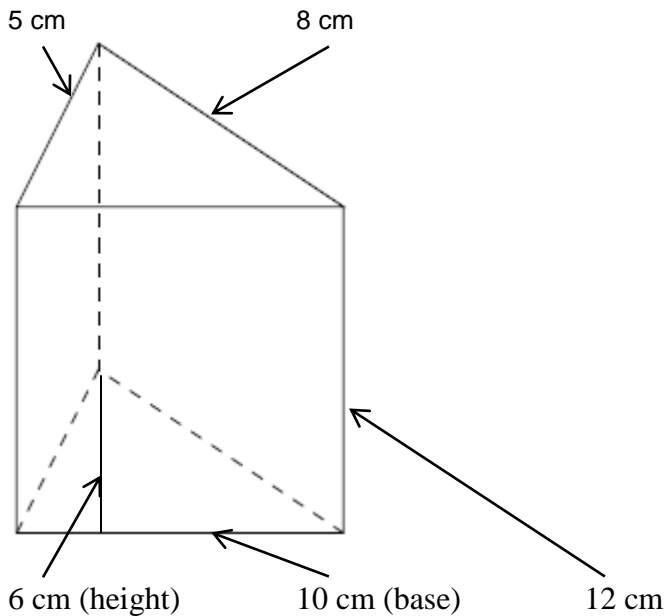


- a)  $81^\circ$  and  $9^\circ$       b)  $90^\circ$  and  $2^\circ$       c)  $75^\circ$  and  $6^\circ$       d)  $45^\circ$  and  $7^\circ$

**MCC7.G.6** Solve real-world and mathematical problems involving area, volume and surface area of two- and three- dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Use the figure and information given below to answer questions 23-26.

John purchased a block of cheese which is in the shape of a triangular prism shown below. The cheese is 12 cm long. The triangular face is a scalene triangle with sides 10 cm and height of 6 cm.



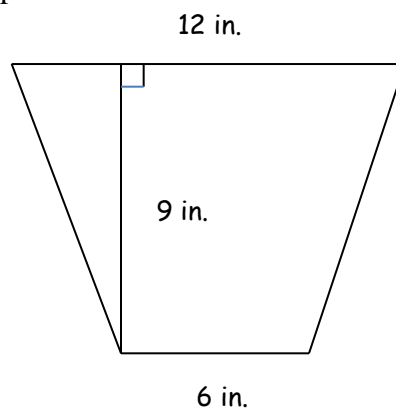
22. What is the volume of the block of cheese?

- a.  $36 \text{ cm}^3$                       b)  $720 \text{ cm}^3$                       c)  $360 \text{ cm}^3$                       d)  $120 \text{ cm}^3$

23. What is the surface area of the block of cheese?

- a.  $276 \text{ cm}^2$                       b)  $336 \text{ cm}^2$                       c)  $300 \text{ cm}^2$                       d)  $294 \text{ cm}^2$

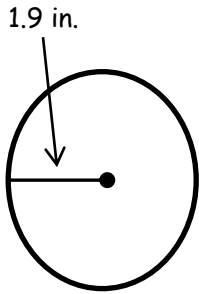
24. A window is shaped like a trapezoid shown below.



What is the area of the window?

- a)  $81 \text{ in}^2$                       b)  $63 \text{ in}^2$                       c)  $141.75 \text{ in}^2$                       d)  $283.5 \text{ in}^2$

25. What is the area of the circle below? (round to the nearest tenth) (use 3.14 for  $\pi$ )

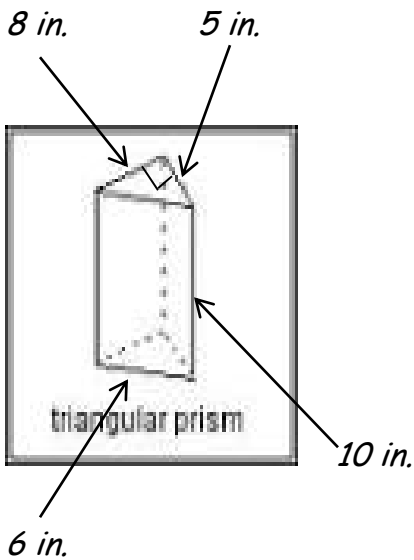


- a.  $10.7 \text{ in}^2$       b)  $5.3 \text{ in}^2$       c)  $11.3 \text{ in}^2$       d)  $10.5 \text{ in}^2$

26. A playground area is circular with a diameter of 42 feet. What is the circumference of the playground? (Round your answer to the nearest tenth)

- a. 113.9      b) 131.9      c) 103.9      d) 301.9

*Use the figure and information given below to answer questions 27-28.*



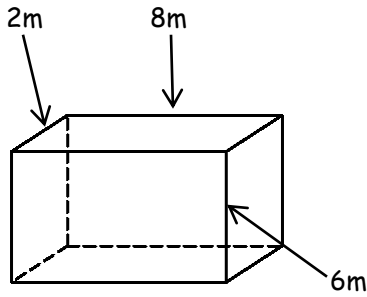
27. What is the volume of the triangular prism?

- a.  $20 \text{ in}^3$       b)  $100 \text{ in}^3$       c)  $400 \text{ in}^3$       d)  $200 \text{ in}^3$

28. What is the surface area of the triangular prism?

- a.  $250 \text{ in}^2$       b)  $230 \text{ in}^2$       c)  $29 \text{ in}^2$       d)  $150 \text{ in}^2$

Use the figure and information given below to answer questions 29-30.



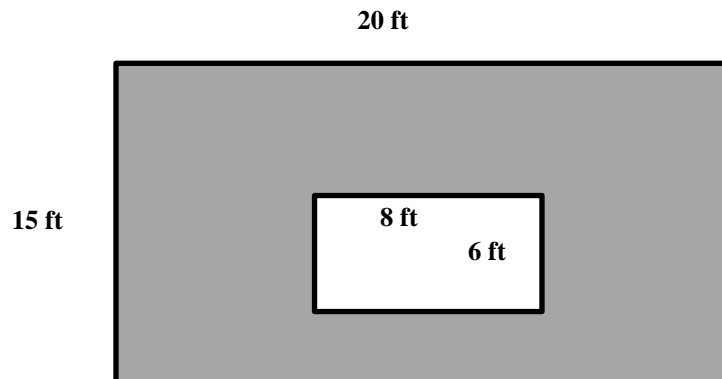
29. What is the volume of the above figure?

- a.  $96 \text{ m}^3$       b)  $106 \text{ m}^3$       c)  $48 \text{ m}^3$       d)  $16 \text{ m}^3$

30. What is the surface area of the above figure?

- a.  $130 \text{ m}^2$       b)  $152 \text{ m}^2$       c)  $192 \text{ m}^2$       d)  $96 \text{ m}^2$

31. The Gonzalez family's backyard is in the shape of a rectangle. The yard measures 20 feet in length and 15 feet in width. In the middle of the yard is a rectangular sandbox which measures 8 feet in length and 6 feet in width. What is the total area of the yard (shaded area) surrounding the sand box?



- a.  $348 \text{ ft}^2$       b)  $160 \text{ ft}^2$       c)  $252 \text{ ft}^2$       d)  $48 \text{ ft}^2$



**CRCT REVIEW CCGPS Math 7 – Geometry Answer Key**

<b>Problem</b>	<b>Standard</b>	<b>Answer</b>
1	MCC7.G.1	B
2	MCC7.G.2	D
3	MCC7.G.2	A
4	MCC7.G.2	D
5	MCC7.G.2	A
6	MCC7.G.2	C
7	MCC7.G.2	D
8	MCC7.G.3	B
9	MCC7.G.3	C
10	MCC7.G.3	A
11	MCC7.G.3	C
12	MCC7.G.3	D
13	MCC7.G.4	C
14	MCC7.G.4	C
15	MCC7.G.4	D
16	MCC7.G.4	C
17	MCC7.G.5	A
18	MCC7.G.5	C
19	MCC7.G.5	D
20	MCC7.G.5	B
21	MCC7.G.5	A
22	MCC7.G.6	C
23	MCC7.G.6	B
24	MCC7.G.6	A
25	MCC7.G.6	C
26	MCC7.G.6	B
27	MCC7.G.6	D
28	MCC7.G.6	B
29	MCC7.G.6	A
30	MCC7.G.6	B
31	MCC7.G.6	C