

**7th Grade
Math
Sample Test Questions**
from the
Teacher's Guide to State Assessment
(answers in the TGSA)

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Support Teachers

Sample Test Items: Grade 7 Math

Sample Mathematics Constructed-Response Items and Scoring Rubrics

Questions 1 and 2 show sample constructed-response items. Each item involves a number of separate steps and the application of multiple skills. The constructed-response items are designed to assess one or more of the GLEs/benchmarks/strands. The items are scored using an item-specific rubric on a scale of 0 to 4 points.

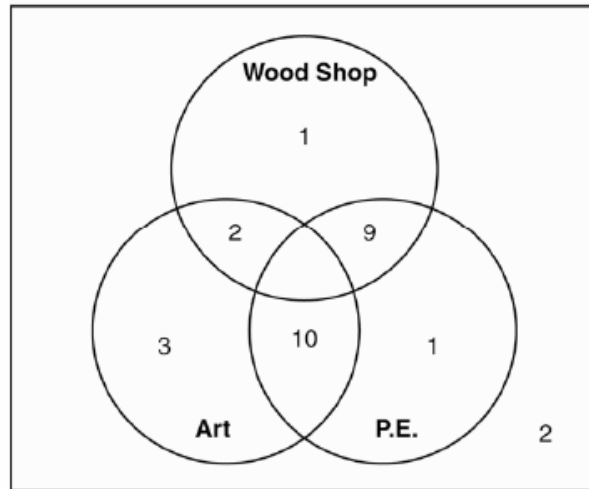
- 1 The table below shows the number of calories and grams of protein in different kinds of bagels sold at Barry's Bagel Shop.

Type of Bagel	Calories	Grams of Protein
Plain	360	13 grams
Cinnamon and Raisin	360	12 grams
Egg	370	14 grams
Wheat	390	16 grams
Blueberry	370	11 grams
Onion	360	13 grams

- A** Kenyatta keeps track of her calories to grams of protein intake for nutritional purposes. What is the ratio of calories to grams of protein in the cinnamon and raisin bagels?
- B** Kenyatta bought 4 wheat bagels and 3 egg bagels. How many total calories are in the 7 bagels? Show your work.
- C** Rachel bought an onion bagel but ate only $\frac{3}{4}$ of it. How many calories are in the portion of the bagel that Rachel ate? Show or explain how you found your answer.
- D** Barry wants to introduce a new high-protein bagel but wants to keep the ratio of calories to grams of protein the same as the egg bagel. If the new bagel has 21 grams of protein, how many calories will it have? Show or explain how you found your answer.

- 2 William surveyed seventh graders at King Middle School to find out which elective was the most popular. Of the students surveyed, 22 were in physical education (P.E.) class, 14 were in wood shop, and 17 were in art class. The Venn diagram indicates the classes in which students were or were not enrolled.

King Middle School Seventh Grade Survey



- A** Fill in the Venn diagram to show how many of the students surveyed were in all 3 classes.
- B** How many total students were in either art or P.E. class? Explain or show how you found your answer.
- C** How many total students were surveyed? Explain or show how you found your answer.
- D** If there are a total of 90 seventh grade students, how many of the students might be expected to be in all 3 of the classes? Explain or show how you found your answer.

Sample CRT Multiple-Choice Items

Questions 3 through 22 are sample CRT multiple-choice items, arranged by GLE. The items test students' ability to solve math problems. Most items are provided in context and require students to use information from stories, graphs, or tables to solve a problem. Items may assess some of the skills of a GLE, while other items may measure all of the skills of the GLE.

- 3 The length of the longest side of a right triangle can be found by using the expression $\sqrt{a^2 + b^2}$, where a and b are the lengths of the two other sides. If $a = 6$ and $b = 8$, what is the length of the longest side?
- A 10
B 48
C 40
D 100
- 4 A hot air balloon was floating at a certain height, x , above the ground. Then the balloon rose 25 feet to a height of 6,000 feet above the ground. Which algebraic equation can be used to find the height, x , of the balloon before it rose?
- A $x - 25 = 6000$
B $x + 25 = 6000$
C $6000 = 25x$
D $6000x = 25$
- 5 Marvin and Jamal collected aluminum cans for recycling. Marvin collected 122 cans, which was more than twice the number of cans, j , Jamal collected. Which inequality represents this statement?
- A $122 < 2j$
B $122 > 2j$
C $122 < 2 + j$
D $122 > j - 2$
- 6 Lori plans to go to the mall to buy earrings, which cost \$7 a pair. She has \$25 but wants to save \$4 for lunch. Lori needs to determine how many pairs of earrings, x , she can buy, so she uses the equation $7x + 4 = 25$. How many pairs of earrings can Lori buy?
- A 2 pairs
B 3 pairs
C 4 pairs
D 5 pairs

- 7 Pat collects seashells. During week one he collected 2 seashells. During week two he collected 5 seashells. During week three he collected 8 seashells. During week four he collected 11 seashells. If w is the week number, which expression can be used to find the number of seashells Pat collected each week?

- A $2.5w$
- B $2w + 3$
- C $2w$
- D $3w - 1$

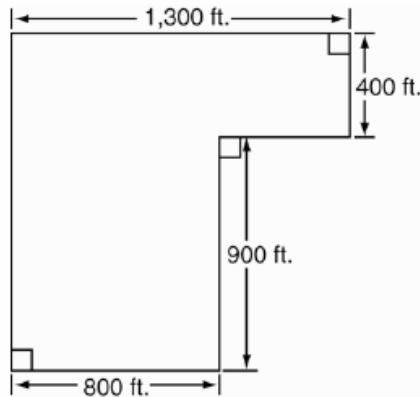
- 8 The table below shows how many socks a company produces over time.

Minutes	Number of Socks
4	248
7	434
10	620
15	930

If x represents the number of minutes, which rule is described in the table?

- A $62x$
- B $\frac{62}{x}$
- C $60x + 8$
- D $63x - 4$

- 9 Brian likes to go bird-watching along the Harvest Park Trail in a nearby forest preserve. He wants to calculate the area enclosed by the trail, shown below.



Based on the diagram, what is the area of the land enclosed by the trail?

- A 1,690,000 sq. ft.
B 1,240,000 sq. ft.
C 5,200 sq. ft.
D 2,600 sq. ft.
- 10 Kara bought four different types of vegetables at the store. The weight of each type of vegetable she bought is shown in the table below.

Carrots	900 grams
Celery	1 kilogram
Radishes	2.5 pounds
Cucumbers	30 ounces

Which vegetable did she buy the greatest weight of?

- A Carrots
B Celery
C Radishes
D Cucumbers

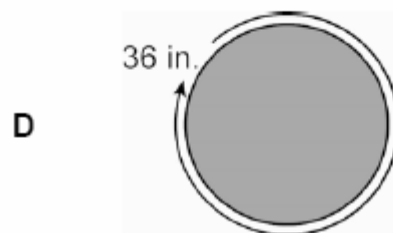
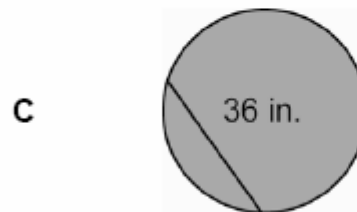
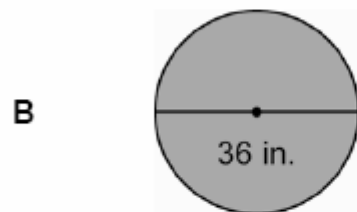
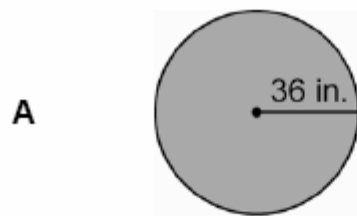
11 The area of the basketball court at a neighborhood playground is 4,500 square feet.
What is the area of the basketball court in square yards?

- A 300 square yards
- B 500 square yards
- C 1,500 square yards
- D 13,500 square yards

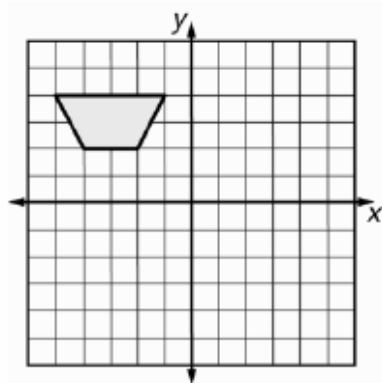
12 The weather forecast for tomorrow calls for a high temperature of 50° Fahrenheit.
About what temperature is this in degrees Celsius?

- A -5°C
- B 10°C
- C 30°C
- D 70°C

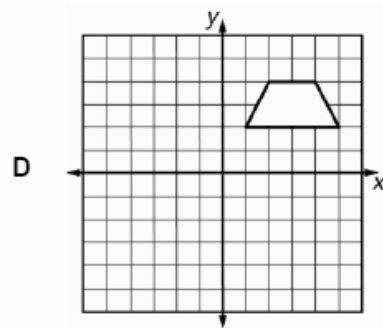
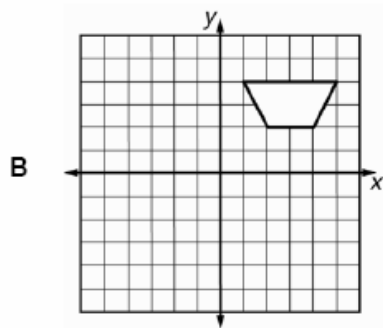
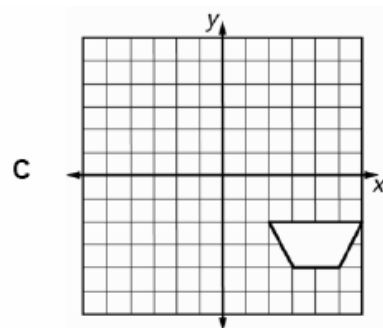
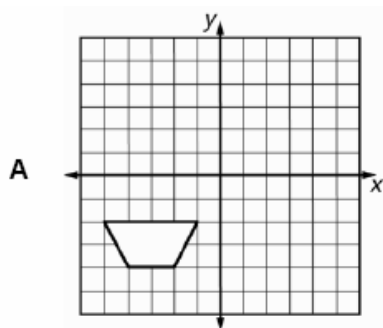
- 13 Rocky's Tunnel Company makes tunnels for playgrounds. Each tunnel has a circular opening with a diameter of 36 in. Which diagram shows a tunnel opening with a diameter of 36 in.?



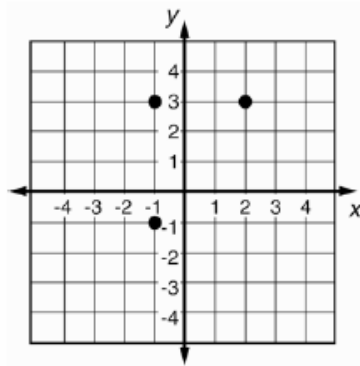
- 14 Samuel sketched a shape. The shape is shown below.



Which coordinate grid shows a reflection of the shape over the y -axis?



- 15 Sandy and her friends went to the park and marked off a rectangular area 8 feet wide and 12 feet long to play badminton. They decided the area was not large enough, so they doubled the length. **By how many square feet did they increase the area?**
- A 12 square feet
B 24 square feet
C 96 square feet
D 192 square feet
- 16 Alex buys a basketball. He reads on its packaging that the basketball has a circumference of 30 inches. **What is the approximate diameter of the basketball?**
- A 3.0 inches
B 4.75 inches
C 6.0 inches
D 9.5 inches
- 17 Reena placed her rectangular notebook on a coordinate grid and drew points where three of the notebook's corners rested.



- What are the coordinates of the location of the notebook's fourth corner?**
- A (2, -1)
B (-1, 2)
C (-2, 2)
D (-2, -1)

- 18 Stella has a triangular table next to her bed. The tabletop is a right triangle with one acute angle measuring 45° . **What is the measure of the other acute angle?**

A 45°
B 60°
C 75°
D 90°

- 19 In its first year of business, a company had 5 employees. In its second year, there were 25 employees, and in its third year, there were 125 employees. **If the pattern continues, how many employees will the company have in the fourth year?**

A 250
B 625
C 3,125
D 15,625

- 20 Sarah dropped a small ball from a ledge and recorded the height the ball reached after each bounce.

Initial Height	1st Bounce	2nd Bounce	3rd Bounce
320 cm	80 cm	20 cm	5 cm

Which rule best describes how high the ball reached after each bounce?

- A The ball reached $\frac{1}{2}$ of its previous height.
B The ball reached $\frac{1}{3}$ of its previous height.
C The ball reached $\frac{1}{4}$ of its previous height.
D The ball reached $\frac{1}{5}$ of its previous height.

- 21 Roderick's fish-tank hose has a tear that is slowly growing longer. On Monday the tear was 1 mm long, on Tuesday it was $1\frac{1}{4}$ mm long, on Wednesday it was $1\frac{1}{2}$ mm long, and on Thursday it was $1\frac{3}{4}$ mm long. **If this pattern continues, on which day will the tear be exactly $2\frac{1}{2}$ mm long?**

A Friday
B Saturday
C Sunday
D Monday

- 22 Mrs. Larson wants to expand her square-shaped sunroom. Each side of the room measures 6 feet. **If Mrs. Larson increases the length of each side by 3 feet, by how much will the area increase?**

A 3 square feet
B 9 square feet
C 45 square feet
D 81 square feet

Sample NRT Multiple-Choice Items

Questions 23 through 31 are sample multiple-choice items representative of those used on the norm-referenced parts of the *i*LEAP test. The survey battery of the Iowa Tests of Basic Skills (ITBS) is designed to measure a wide range of student achievement. Some items address Louisiana GLEs at the specified grade level, while other items address Louisiana GLEs at other grade levels.

- 23 **How should you write .02 as a percent?**

A .02%
B .20%
C 2.0%
D 20%

24 Which fraction is greater than $\frac{1}{6}$ but less than $\frac{1}{3}$?

A $\frac{1}{9}$

B $\frac{1}{2}$

C $\frac{1}{4}$

D $\frac{1}{8}$

25 What is the value of $8 - 3 \times 2$?

A 2

B 5

C 10

D 22

26 A honeybee colony that contains 50,000 bees in late fall may have only 10,000 bees at the end of winter. What percent of the bees live through the winter season?

A 5%

B 20%

C 25%

D 50%

- 27 Snow Mountain has a snow-making machine that will lay down an inch of snow per hour over an area of 40,000 square feet. **Which expression shows how to find the number of hours this machine takes to lay down 1 inch of new snow on a ski run that is 800 feet long and 150 feet wide?**

A $\frac{(800 \times 150)}{40,000}$

B $\frac{40,000}{(800 \times 150)}$

C $\frac{(150 \times 40,000)}{800}$

D $\frac{(800 \times 40,000)}{150}$

- 28 The dimensions of four rectangles are given below. **Which rectangle does not have the same ratio of length to width as the other three?**

A 14 inches \times 10 inches

B $3\frac{1}{2}$ inches \times $2\frac{1}{2}$ inches

C 7 inches \times 5 inches

D $4\frac{1}{2}$ inches \times $2\frac{3}{4}$ inches

- 29 Mr. Rogers bought a small motorboat. Traveling at a speed of 20 miles per hour, he could go 50 miles on a 6-gallon tank of fuel. **At that rate, how many gallons of fuel would he need for a 75-mile trip?**

A $7\frac{1}{2}$

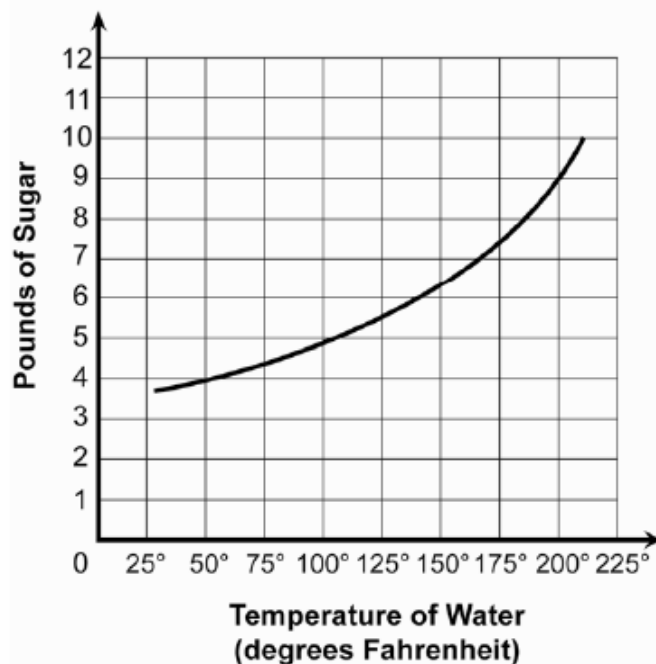
B 9

C 12

D 20

Directions: Use the graph below to answer questions 30 and 31.

**Amount of Sugar That Will Dissolve
in One Quart of Water at Different Temperatures**



30 About how many pounds of sugar will dissolve in one quart of water at 140 °F?

- A 5
- B 6
- C 7
- D 8

31 What conclusion can be drawn from the graph?

- A Sugar raises the temperature of water.
- B Sugar will not dissolve in cold water.
- C The hotter the water, the more sugar it will dissolve.
- D A given amount of water will dissolve an equal amount of sugar.

