Student Name _____

MCAP
Maryland Comprehensive
Assessment Program

**Grade 7
Mathematics
Test Book**

Practice Test

Section 1
(Non-Calculator)

Directions:

Today, you will take Section 1 of the Grade 7 Mathematics Practice Test. You will not be allowed to use a calculator.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your answer document. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely. If a question asks you to show or explain your work, you must do so to receive full credit. Only responses written within the space provided will be scored.

If you do not know the answer to a question, you may go on to the next question. If you finish early, you may review your answers and any questions you did not answer in this Section ONLY. Do not go past the stop sign.

Directions for Completing the Answer Grids

1. Work the problem and find an answer.

2. Write your answer in the boxes at the top of the grid.

3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.

4. Under each box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.

5. Do not fill in a circle under an unused box.

6. Fractions cannot be entered into an answer grid and will not be scored. Enter fractions as decimals.

7. See below for examples on how to correctly complete an answer grid.

EXAMPLES

To answer −3 in a question, fill in the answer grid as shown below.

To answer .75 in a question, fill in the answer grid as shown below.

GO ON ▶

1 The graph shows the relationship between the number of cans of tuna bought and the total cost of the cans of tuna.
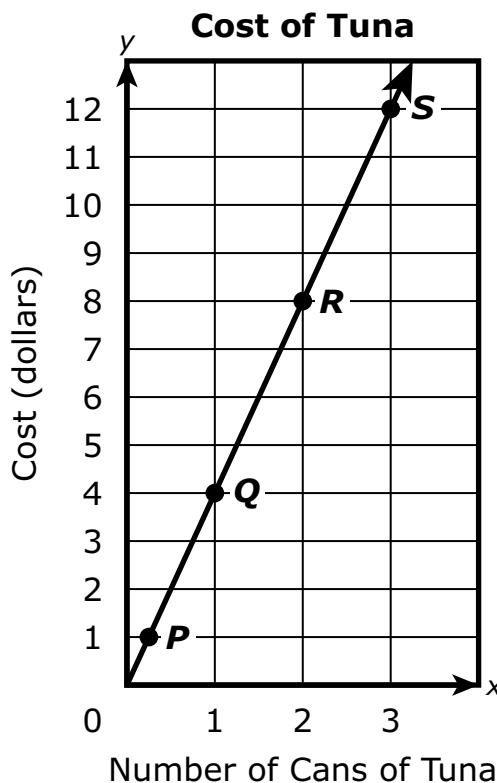
Cost of Tuna

For which point on the graph does the *y*-coordinate represent the unit rate for the cost of the cans of tuna?

A point *P*

B point *Q*

C point *R*

D point *S*

GO ON ▶

2 An expression is shown.

$$-3.1 + 1.6$$

What is the value of the expression?

A −4.7

B −4.5

C −1.7

D −1.5

**3** An expression is shown.

$$5(x + 2y) - 3(2x + y)$$

Which expression is equivalent to the given expression?

A $2xy$

B $8xy$

C $-x + 3y$

D $-x + 7y$

GO ON ▶

4 The graph shows a proportional relationship from y to x that passes through the points located at (2, 6) and (3, 9).
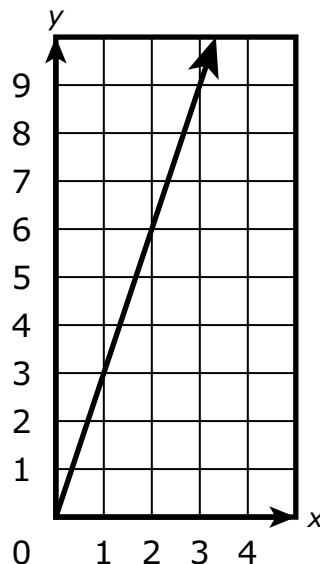
What is the constant of proportionality?

Enter your answer in the space provided.

5 The temperature at 8:00 a.m. was 5 degrees Fahrenheit. Over the next 3 hours, the temperature decreased by 2 degrees each hour.

What was the temperature, in degrees Fahrenheit, at 11:00 a.m.?

A 1

B 0

C −1

D −6

8

GO ON ▶

6 A volunteer is planning to hold tutoring sessions next year to tutor students in math and science.

- The volunteer will provide 4 tutoring sessions each month.
- The number of hours the volunteer will tutor in each session is the same.
- The volunteer will spend 1 hour of each session tutoring science.
- The volunteer wants to spend at least 120 hours tutoring next year.

The inequality $48(x + 1) \geq 120$ can be used to represent this situation.

What is the meaning of the possible solutions for x in the inequality?

A the number of hours spent tutoring math per month

B the number of hours spent tutoring math per session

C the number of hours spent tutoring science per month

D the number of hours spent tutoring science per session

7 Which expressions have values that are negative?

Select **all** that apply.

A $\dfrac{10}{-5}$

B $\dfrac{-10}{-5}$

C $\dfrac{-10}{5}$

D $-\left(\dfrac{-10}{5}\right)$

E $-\left(\dfrac{10}{-5}\right)$

GO ON ▶

8   A student walks other people's dogs to earn money.

- The student earns $2 for walking each dog.
- On Monday, the student walked several dogs and received a $4 tip from one person.
- The student earned a total of $22 on Monday.

Which sentence includes the equation and solution that represent this situation where d is the number of dogs the student walked on Monday?

A The equation is $22 = 4d + 2$, and the solution is $d = 5$.

B The equation is $22 = 4d - 2$, and the solution is $d = 6$.

C The equation is $22 = 2d + 4$, and the solution is $d = 9$.

D The equation is $22 = 2d - 4$, and the solution is $d = 13$.

9   A table of values is shown.

x	y
5	2
10	4
15	6
20	8

Which equation relates each value of y in the table to the corresponding value of x?

A $y = \frac{2}{5}x$

B $y = \frac{5}{2}x$

C $y = 2x$

D $y = 5x$

GO ON ▶

10 The variable *p* represents the population of a town last year. This year, the population of the town increased by 15%. The expression shown represents the population of the town this year.

$$p + 0.15p$$

Which expression can also be used to represent the population of the town this year?

A $0.16p$

B $0.3p$

C $1.15p$

D $2.3p$

11 Point *k* is plotted on the number line.
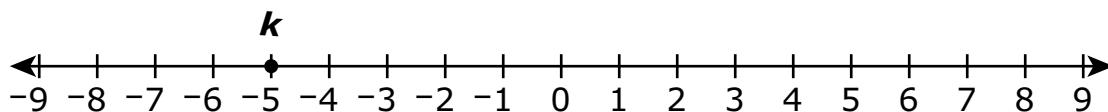
A point will be plotted on the number line to represent the value of the expression $k + 4$.

What is the value of the expression?

Enter your answer in the space provided.

GO ON ▶

12 In a proportional relationship between x and y, the value of y increases by 1 when the value of x increases by 2.

What is the constant of proportionality that relates y to x?

A $\dfrac{1}{2}$

B $\dfrac{3}{5}$

C $\dfrac{5}{3}$

D $\dfrac{2}{1}$

STOP

STOP
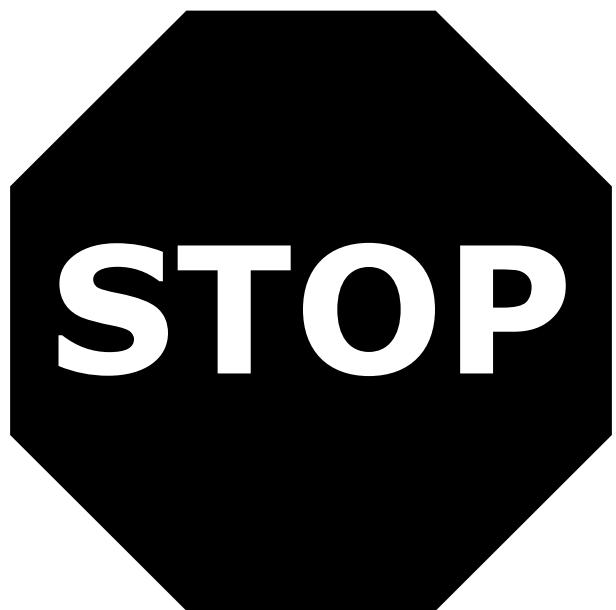
You have come to the end of Section 1 of the test. Review your answers from Section 1 only.

Section 2
(Calculator)

Directions:

Today, you will take Section 2 of the Grade 7 Mathematics Practice Test. You will be allowed to use a calculator.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your answer document. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely. If a question asks you to show or explain your work, you must do so to receive full credit. Only responses written within the space provided will be scored.

If you do not know the answer to a question, you may go on to the next question. If you finish early, you may review your answers and any questions you did not answer in this Section ONLY. Do not go past the stop sign.

GO ON ▶

Directions for Completing the Answer Grids

1. Work the problem and find an answer.

2. Write your answer in the boxes at the top of the grid.

3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.

4. Under each box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.

5. Do not fill in a circle under an unused box.

6. Fractions cannot be entered into an answer grid and will not be scored. Enter fractions as decimals.

7. See below for examples on how to correctly complete an answer grid.

EXAMPLES

To answer −3 in a question, fill in the answer grid as shown below.

To answer .75 in a question, fill in the answer grid as shown below.

GO ON ▶

1 The table shows a relationship between the variables x and y.

| x	y
2	15
3	24
4	30
5	40
6	45

Which statement explains whether the relationship between x and y is proportional?

A It is proportional because as the value of x increases, the value of y increases.

B It is proportional because the ratio of y to x is the same for all values in the table.

C It is not proportional because the ratio of y to x is not the same for all values in the table.

D It is not proportional because when the value of x increases by 1, the value of y does not increase by 1.

GO ON ▶

2 In the coordinate plane shown, point *J* and point *K* are two of the vertices of right triangle *JKL*.
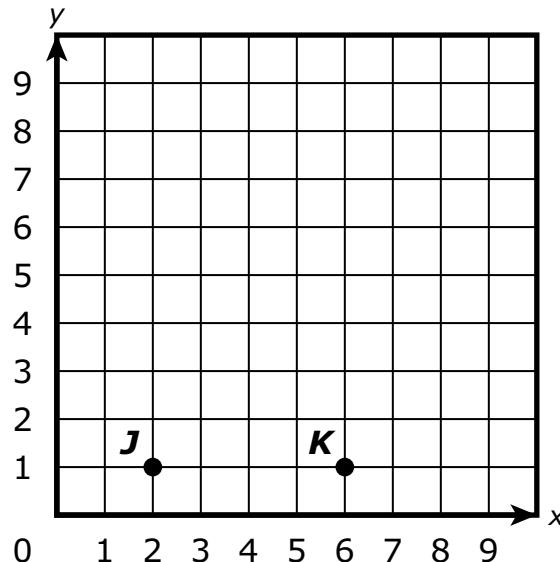
Line segment *KL* has a length of 3 units and is perpendicular to line segment *JK*.

Which ordered pair represents the location of point *L* on the coordinate plane?

A (2, 4)

B (4, 2)

C (4, 6)

D (6, 4)

3 A clothing store is having a sale where all regular prices have been reduced by 25%.

What is the sale price, in dollars, of a shirt that has a regular price of $16?

Enter your answer in the space provided.

GO ON ▶

4 An equation is shown.

$$-4(x - 0.5) = 6$$

Two students both solved the equation incorrectly. Each student's work is shown.

First Student's Work:

$$-4(x - 0.5) = 6$$
Step 1: $-4x - 2 = 6$
Step 2: $-4x = 8$
Step 3: $x = -2$

Second Student's Work:

$$-4(x - 0.5) = 6$$
Step 1: $-4x + 2 = 6$
Step 2: $-4x = 8$
Step 3: $x = -2$

Which statement identifies the step with the first mistake for each student?

A The first student made the first mistake in Step 1, and the second student made the first mistake in Step 1.

B The first student made the first mistake in Step 1, and the second student made the first mistake in Step 2.

C The first student made the first mistake in Step 2, and the second student made the first mistake in Step 1.

D The first student made the first mistake in Step 2, and the second student made the first mistake in Step 2.

GO ON ▶

5 A hotel wants to buy a pump to fill a hot tub with water. The lines graphed on the coordinate grid represent the rates at which three pumps can fill the hot tub with water.

Filling the Hot Tub
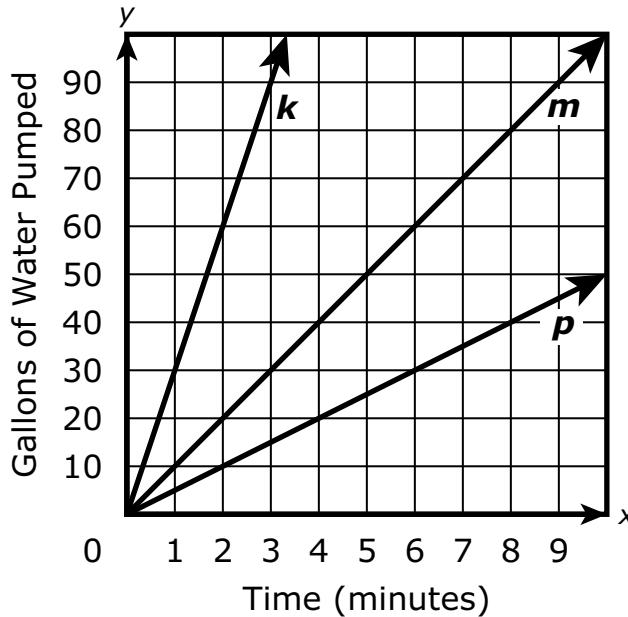
The hotel determined that the slowest of the three pumps can fill the hot tub with water in 90 minutes. Using this information, explain how to determine the number of minutes it will take for the fastest of the three pumps to fill the hot tub with water.

Enter your answer and your justification in the space provided.

GO ON ▶

6   The floor of a room is going to be covered with ceramic tiles.

- The length of the room is 12 feet.

- The width of the room is $\frac{2}{3}$ of the length of the room.

- The ceramic tiles are squares with $1\frac{1}{2}$ inches per side.

Which expression represents the number of ceramic tiles that will be needed?

A $(12 \times 12)\left(12 \times \frac{2}{3} \times 12\right) \div \left(\frac{3}{2} \times \frac{3}{2}\right)$

B $(12 \times 12)\left(12 \times \frac{2}{3} \times 12\right) \times \left(\frac{3}{2} \times \frac{3}{2}\right)$

C $12\left(12 \times \frac{2}{3}\right) \div \left(\frac{3}{2} \times \frac{3}{2}\right)$

D $12\left(12 \times \frac{2}{3}\right) \times \left(\frac{3}{2} \times \frac{3}{2}\right)$

GO ON ▶

7 A student walked at a constant rate from the cafeteria to a classroom. The point on the graph represents the time and distance the student had been walking when the student was halfway to the classroom.

Walk to Classroom
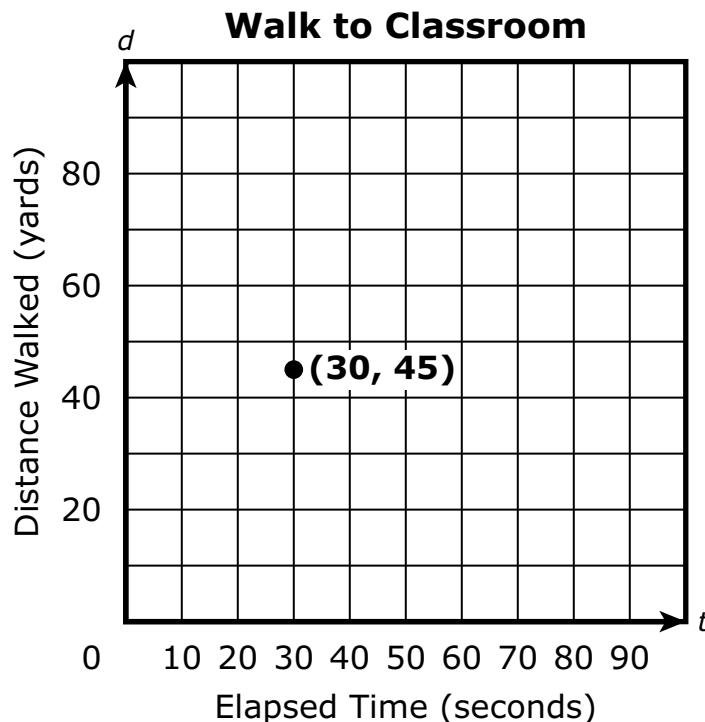
Which sentence describes the student's walk from the cafeteria to the classroom?

A It took the student 30 seconds to walk a total of 45 yards.

B It took the student 45 seconds to walk a total of 30 yards.

C It took the student 60 seconds to walk a total of 90 yards.

D It took the student 90 seconds to walk a total of 60 yards.

21

GO ON ▶

8 A company produces 25,000 cans of soup per day that should each contain 8 ounces of soup. A quality control employee selects a random sample of 50 cans of soup each day and determines if those cans contain 8 ounces of soup. On a certain day, 2 cans in the sample contained less than 8 ounces of soup.

Based on this sample, which value is the best estimate for the number of cans of soup produced on this day that will contain less than 8 ounces of soup?

A 100

B 250

C 500

D 1000

STOP

STOP
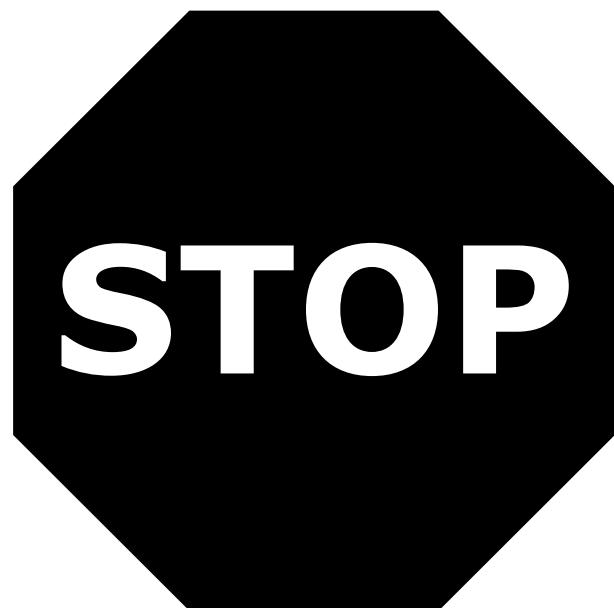
You have come to the end of Section 2 of the test. Review your answers from Section 2 only.

STOP

Section 3
(Calculator)

Directions:

Today, you will take Section 3 of the Grade 7 Mathematics Practice Test. You will be allowed to use a calculator.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your answer document. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely. If a question asks you to show or explain your work, you must do so to receive full credit. Only responses written within the space provided will be scored.

If you do not know the answer to a question, you may go on to the next question. If you finish early, you may review your answers and any questions you did not answer in this Section ONLY. Do not go past the stop sign.

GO ON ▶

Directions for Completing the Answer Grids

1. Work the problem and find an answer.

2. Write your answer in the boxes at the top of the grid.

3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.

4. Under each box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.

5. Do not fill in a circle under an unused box.

6. Fractions cannot be entered into an answer grid and will not be scored. Enter fractions as decimals.

7. See below for examples on how to correctly complete an answer grid.

EXAMPLES

To answer −3 in a question, fill in the answer grid as shown below.

To answer .75 in a question, fill in the answer grid as shown below.

GO ON ▶

1 In the figure shown, two lines intersect at point P, and the measures of three angles are given.
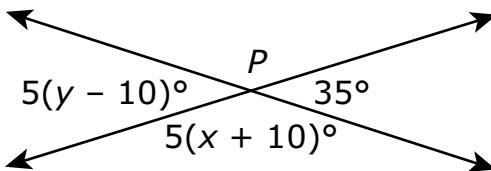

Based on the angle measures shown in the figure, what are the values of x and y?

A $x = 19$ and $y = -3$

B $x = 19$ and $y = 17$

C $x = 39$ and $y = -3$

D $x = 39$ and $y = 17$

GO ON ▶

2 A sports organization collected data about the shoe sizes of soccer players and hockey players. The dot plots show the data that were collected.

Soccer Players

Shoe Sizes

Hockey Players
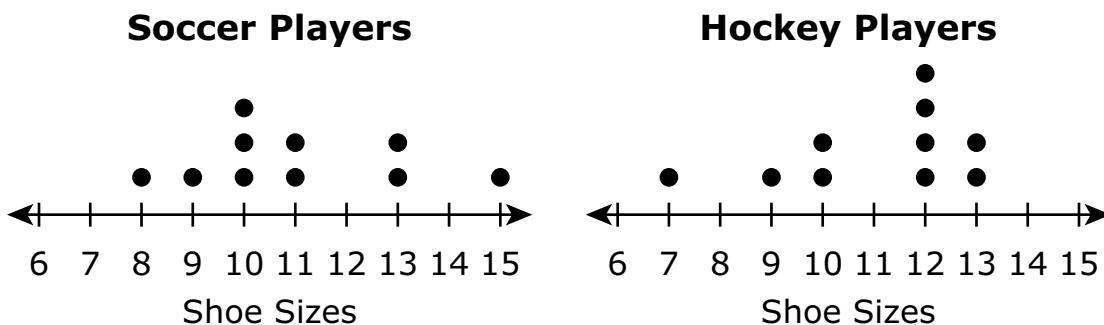
Shoe Sizes

Each data set has a mean absolute deviation of 1.6.

How do the medians of the data sets compare in terms of the mean absolute deviations of the data sets?

A The median shoe size for the hockey players is 1.5 greater than the median shoe size for the soccer players, and the difference is 1.25 times the mean absolute deviation of either data set.

B The median shoe size for the hockey players is 2 greater than the median shoe size for the soccer players, and the difference is 1.25 times the mean absolute deviation of either data set.

C The median shoe size for the hockey players is 1.5 greater than the median shoe size for the soccer players, and the difference is 0.9375 times the mean absolute deviation of either data set.

D The median shoe size for the hockey players is 2 greater than the median shoe size for the soccer players, and the difference is 0.9375 times the mean absolute deviation of either data set.

GO ON ▶

3 Two expressions are given.

- $3.5n + 4\left(5\frac{1}{4}n - 1.5\right)$

- $-21\left(\frac{2}{7} - \frac{7}{6}n\right)$

Apply the properties of operations to show why $3.5n + 4\left(5\frac{1}{4}n - 1.5\right)$ is equivalent to $-21\left(\frac{2}{7} - \frac{7}{6}n\right)$.

Show your work or explain your reasoning.

Enter your work or explanation in the space provided.

**4** An expression is shown.

$$\frac{-72}{-6}$$

A student claims the value of the expression is -12.

Which statement **best** describes whether the student's claim is correct?

A The student's claim is incorrect because the value of -12×-6 is -72.

B The student's claim is correct because the value of -12×-6 is -72.

C The student's claim is incorrect because the value of -12×-6 is 72.

D The student's claim is correct because the value of -12×-6 is 72.

GO ON ▶

5   A farmer's horses drink from a water tank with dimensions shown. All angles in the figure are right angles.
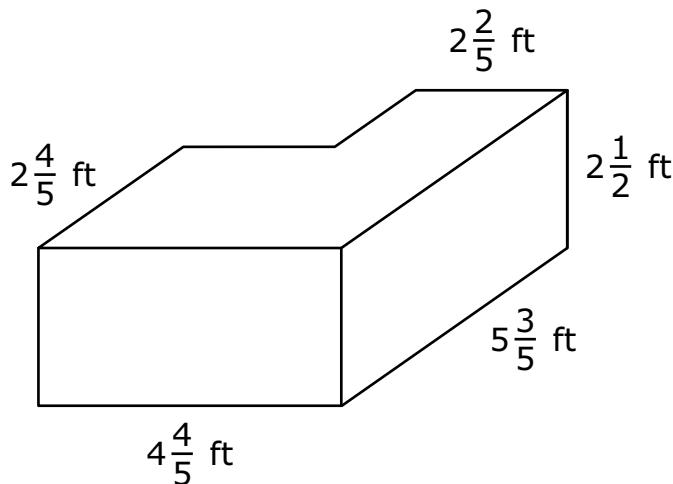
- Determine the volume, in cubic feet, of the tank.

- Given that 1 cubic foot of water is approximately equal to $7\frac{1}{2}$ gallons, estimate the amount of water, in gallons, needed to fill the tank to 80% of its capacity.

Explain how you found your answers.

Enter your answers and your explanation in the space provided.

GO ON ▶

6   A teacher wants to buy the supplies listed.

- a package of pens that costs $4.97
- packages of paper that cost $3 each

Which additional piece of information is needed to determine the greatest number of packages of paper the teacher can buy?

A the total number of students in all of the teacher's classes

B the total amount of money the teacher spent on supplies last month

C the total number of packages of pens and packages of paper the teacher already has

D the total amount of money the teacher can spend on the package of pens and the packages of paper

7   A worker painted $\frac{1}{5}$ of a room using $\frac{3}{8}$ gallon of paint.

At this rate, how many gallons of paint will the worker use to paint the whole room?

A $13\frac{1}{3}$

B $1\frac{7}{8}$

C $\frac{23}{40}$

D $\frac{8}{15}$

STOP

You have come to the end of Section 3 of the test. Review your answers from Section 3 only.

Section 4
(Calculator)

Directions:

Today, you will take Section 4 of the Grade 7 Mathematics Practice Test. You will be allowed to use a calculator.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your answer document. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely. If a question asks you to show or explain your work, you must do so to receive full credit. Only responses written within the space provided will be scored.

If you do not know the answer to a question, you may go on to the next question. If you finish early, you may review your answers and any questions you did not answer in this Section ONLY. Do not go past the stop sign.

GO ON ▶

Directions for Completing the Answer Grids

1. Work the problem and find an answer.

2. Write your answer in the boxes at the top of the grid.

3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.

4. Under each box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.

5. Do not fill in a circle under an unused box.

6. Fractions cannot be entered into an answer grid and will not be scored. Enter fractions as decimals.

7. See below for examples on how to correctly complete an answer grid.

EXAMPLES

To answer −3 in a question, fill in the answer grid as shown below.

To answer .75 in a question, fill in the answer grid as shown below.

GO ON ▶

1 A right rectangular prism will be sliced by a plane perpendicular to the base of the prism.

Which polygon describes the shape of the face created when the plane slices the prism?

A hexagon

B pentagon

C rectangle

D triangle

2 A flat, rectangular garden has a perimeter of 24 meters, and the ratio of the length of the garden to the width is 2 to 1. The steps to determine the length, in meters, of the garden are shown.

At least one mistake was made.

- Step 1: $2l + 2w = 24$
- Step 2: $2l + 2(2l) = 24$
- Step 3: $2l + 4l = 24$
- Step 4: $6l = 24$
- Step 5: $l = 4$

In which step was the first mistake made, **and** what is the correct length of the garden?

A The first mistake was made in Step 2, and the correct length is 6 meters.

B The first mistake was made in Step 2, and the correct length is 8 meters.

C The first mistake was made in Step 3, and the correct length is 6 meters.

D The first mistake was made in Step 3, and the correct length is 8 meters.

GO ON ▶

3 A gardener will plant grass in a circular, flat garden. The part of the garden where the gardener will plant the grass is represented by the shaded area in the figure shown.
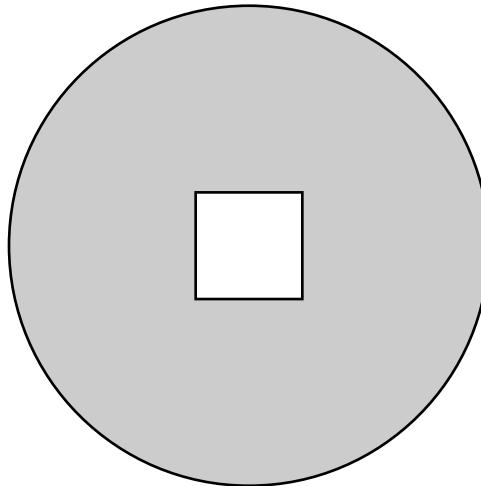
- The garden has a diameter of 18 feet.
- There is a square concrete slab in the center of the garden. Each side of the square measures 4 feet.
- The cost of the grass is $0.90 per square foot.

Determine the total cost, in dollars, of the grass that the gardener needs.

Enter your answer in the space provided.

GO ON ▶

4 A restaurant is holding a raffle, and each winner will receive a randomly selected prize. The table shows the types of prizes the winners can receive and how many prizes of each type are available.

Prizes

| Prize Type	Number of Prizes Available
Hat	25
Sunglasses	12
T-shirt	10
Gift Card	2
$100	1

Which sentence describes an event that is likely to occur?

A A raffle winner receives a prize other than a T-shirt.

B A raffle winner receives a prize other than a hat.

C A raffle winner receives a gift card.

D A raffle winner receives $100.

GO ON ▶

5 A game has two players. On each turn, a player spins two spinners to determine how far to move a game piece.

- Each spinner is divided into 4 equal sections.
- A different integer from 1 to 4 is written on each section of one spinner.
- A different integer from −1 to 2 is written on each section of the other spinner.
- The player finds the sum of the integers shown and moves the game piece that number of spaces.
- The first player to land on or pass the "Win" space wins the game.

The figure shows the position of each player's game pieces. Player A needs to move 6 spaces or more to win, and Player B needs to move 3 spaces or more to win.

A			B			Win
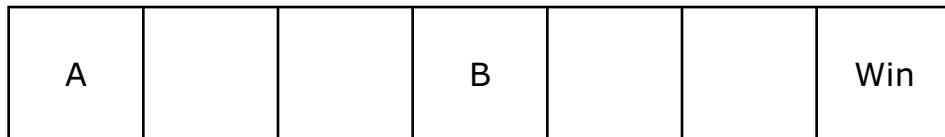
- If Player A has the next turn, what is the probability that Player A wins the game? Show or explain how you determined your answer.
- If Player B has the next turn, what is the probability that Player B wins the game? Show or explain how you determined your answer.

Enter your answer and your explanation in the space provided.

GO ON ▶

6 The regular price of $28 for dog food is discounted by 25%. The sales tax is 8% of the discounted price.

A student used the steps shown to determine the price of the dog food after the discount is applied and including sales tax.

- Step 1: $28\left(\dfrac{3}{4}\right)(1 + 0.08)$

- Step 2: $21(1.08)$

- Step 3: 22.68

Which statement is true about the work?

A An error occurred in Step 1 because $\dfrac{3}{4}$ should have been 0.25.

B An error occurred in Step 2 because the product of 28 and $\dfrac{3}{4}$ is $28\dfrac{3}{4}$.

C An error occurred in Step 1 because $(1 + 0.08)$ should have been 0.92.

D The work is correct and the discounted price of the dog food with sales tax is $22.68.

7 A person chopped $\dfrac{1}{6}$ of an onion and covered $\dfrac{2}{3}$ of a pizza with it.

What fraction of the onion would the person need to cover the entire pizza?

A $\dfrac{5}{6}$

B $\dfrac{1}{2}$

C $\dfrac{1}{4}$

D $\dfrac{1}{9}$

GO ON ▶

8 A group of 3 students bought some snacks for a movie. The list shows the snacks the students bought and the costs of the snacks. The costs include sales tax.

- 1 container of popcorn that cost $4.95
- 2 boxes of candy that each cost $2.70
- 3 sodas that each cost $3.75

The 3 students split the cost of the snacks evenly. How much did each student pay for the snacks?

A $7.20

B $6.30

C $4.70

D $3.80

STOP

Section 4

STOP
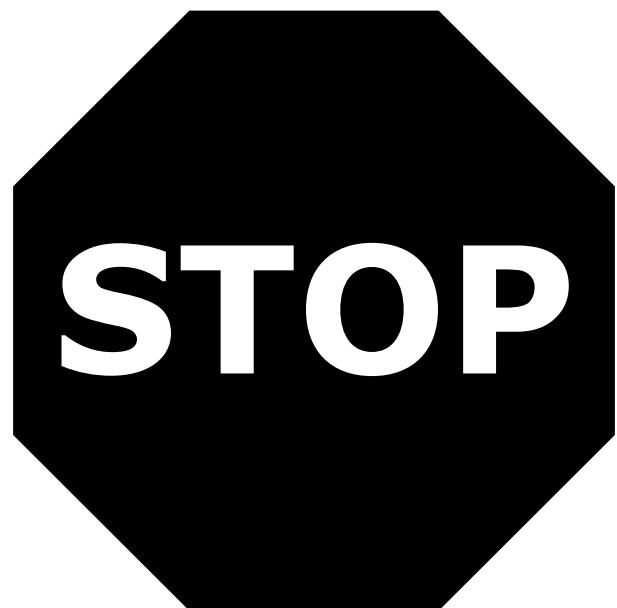
You have come to the end of Section 4 of the test. Review your answers from Section 4 only.

STOP

P

7-MATH