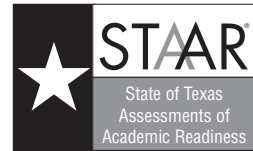


GRADE 6
Mathematics

Administered May 2022

RELEASED

STAAR GRADE 6 MATHEMATICS REFERENCE MATERIALS



AREA

Triangle

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

Rectangle or parallelogram

$$A = bh$$

Trapezoid

$$A = \frac{1}{2}(b_1 + b_2)h$$

VOLUME

Rectangular prism

$$V = Bh$$

Inches

0
1
2
3
4
5
6
7
8

STAAR GRADE 6 MATHEMATICS REFERENCE MATERIALS

LENGTH

Customary

1 mile (mi) = 1,760 yards (yd)

1 yard (yd) = 3 feet (ft)

1 foot (ft) = 12 inches (in.)

Metric

1 kilometer (km) = 1,000 meters (m)

1 meter (m) = 100 centimeters (cm)

1 centimeter (cm) = 10 millimeters (mm)

VOLUME AND CAPACITY

Customary

1 gallon (gal) = 4 quarts (qt)

1 quart (qt) = 2 pints (pt)

1 pint (pt) = 2 cups (c)

1 cup (c) = 8 fluid ounces (fl oz)

Metric

1 liter (L) = 1,000 milliliters (mL)

WEIGHT AND MASS

Customary

1 ton (T) = 2,000 pounds (lb)

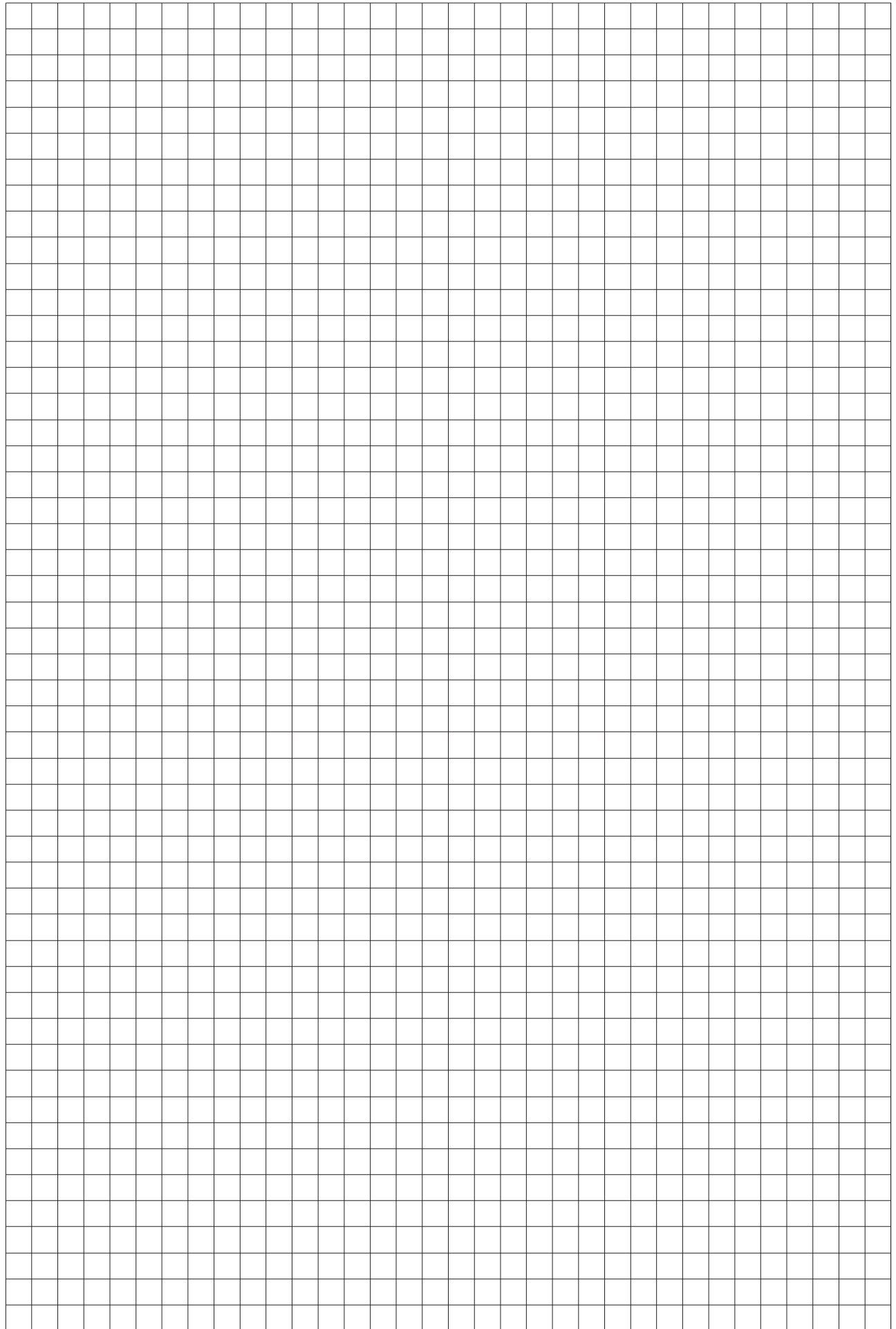
1 pound (lb) = 16 ounces (oz)

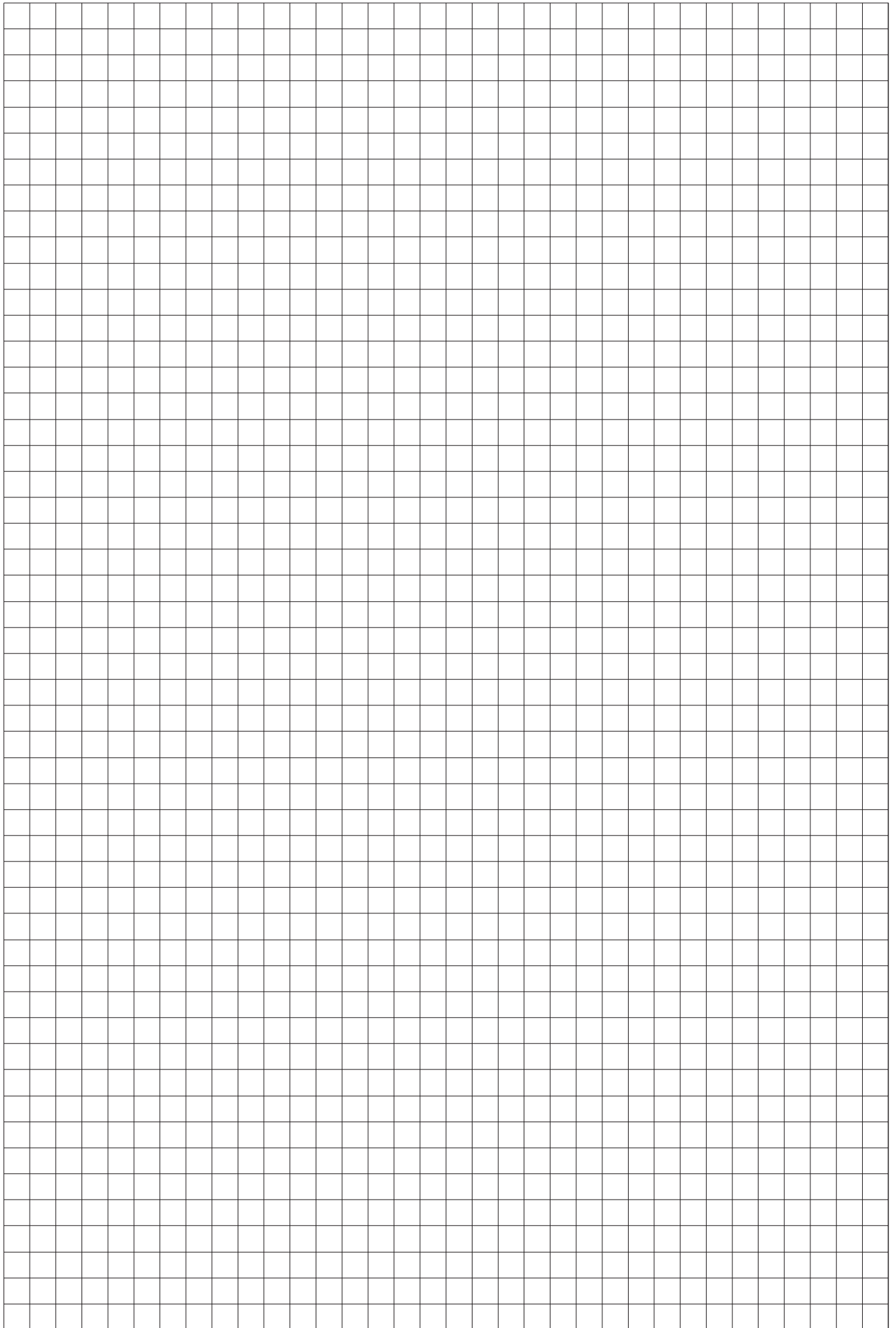
Metric

1 kilogram (kg) = 1,000 grams (g)

1 gram (g) = 1,000 milligrams (mg)







MATHEMATICS

DIRECTIONS

Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

- 1 The tables show the relationship between x and y for each of two data sets.

Data Set I

x	0	1	2	3	4
y	0	4	8	12	16

Data Set II

x	0	1	2	3	4
y	4	5	6	7	8

Which statements describe the relationship between x and y in each of the data sets?

- A** Both data sets show additive relationships.

In Data Set I, y is 3 more than x , and in Data Set II, y is 4 more than x .

- B** Both data sets show multiplicative relationships.

In Data Set I, y is 4 times x , and in Data Set II, y is 2 times x .

- C** Data Set I shows a multiplicative relationship in which y is 4 times x .

Data Set II shows an additive relationship in which y is 4 more than x .

- D** Data Set I shows an additive relationship in which y is 12 more than x .

Data Set II shows a multiplicative relationship in which y is 2 times x .

2 Which expression is equivalent to $\frac{12+6}{2}$?

F $(12 + 6) \div 2$

G $12 + 6 \div 2$

H $12 \div 2 + 6$

J $12 \div (2 + 6)$

3 Emiline earns \$6.50 for each hour of work as a babysitter. How much will she earn for working 5.5 hours as a babysitter?

A \$12.00

B \$35.75

C \$33.55

D \$30.25

4 The bases of a trapezoid are 8 centimeters and 12 centimeters, and the height is h centimeters. Which equation can be used to represent A , the area of the trapezoid in square centimeters?

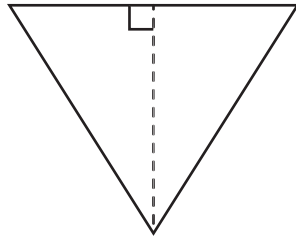
F $A = \frac{1}{2}(8 + 12)h$

G $A = \frac{1}{2}(8 \cdot 12)h$

H $A = (8 + 12)h$

J $A = (8 \cdot 12)h$

- 5 Use the ruler provided to measure the dimensions of the triangle to the nearest $\frac{1}{4}$ inch.



Which measurement is closest to the area of the triangle in square inches?

- A $1\frac{7}{8}$ in.²
B $2\frac{1}{4}$ in.²
C $\frac{15}{16}$ in.²
D $\frac{9}{16}$ in.²
-

- 6 Which expression is equivalent to $w - \frac{1}{4}(4)$?
- F $w - 0$
G $w - 1$
H $-\frac{1}{4}w(4)$
J $\frac{3}{4}w(4)$

- 7** During a 90-minute school play, the main character was on stage 80% of the time.

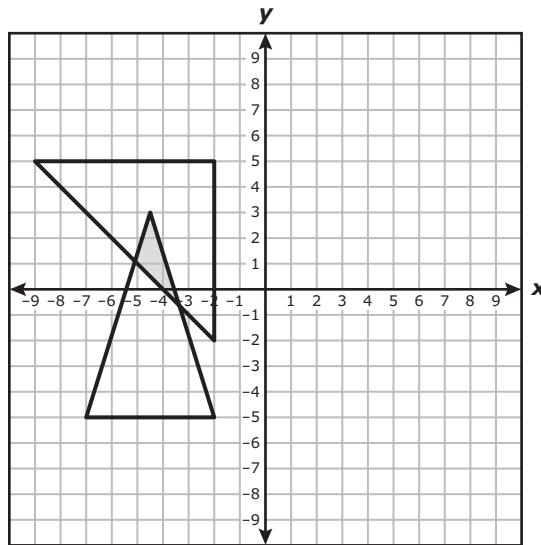
What amount of time in minutes was the main character on stage?

- A** 88.9 minutes
 - B** 112.5 minutes
 - C** 80 minutes
 - D** 72 minutes
-

- 8** Which statement about 96 multiplied by $\frac{11}{8}$ is true?

- F** The product is less than $\frac{11}{8}$.
- G** The product is greater than 96.
- H** The product is between $\frac{11}{8}$ and 96.
- J** The product is equal to 96.

- 9 A right triangle and an isosceles triangle are graphed on the coordinate grid. The shaded section represents all the points located inside both triangles.



Which coordinates represent the location of a point inside the shaded section?

- A** (- 1.5, 4.5)
- B** (1.5, -4.5)
- C** (4.5, -1.5)
- D** (- 4.5, 1.5)
-
- 10 The wingspan of an adult bald eagle can be 7 feet. What is this wingspan in inches?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

11 Which expression is equivalent to $10 + 5^4$?

A $10 + 5 \cdot 4$

B $(10 + 5)^4$

C $(10 + 5) \cdot 4$

D None of these

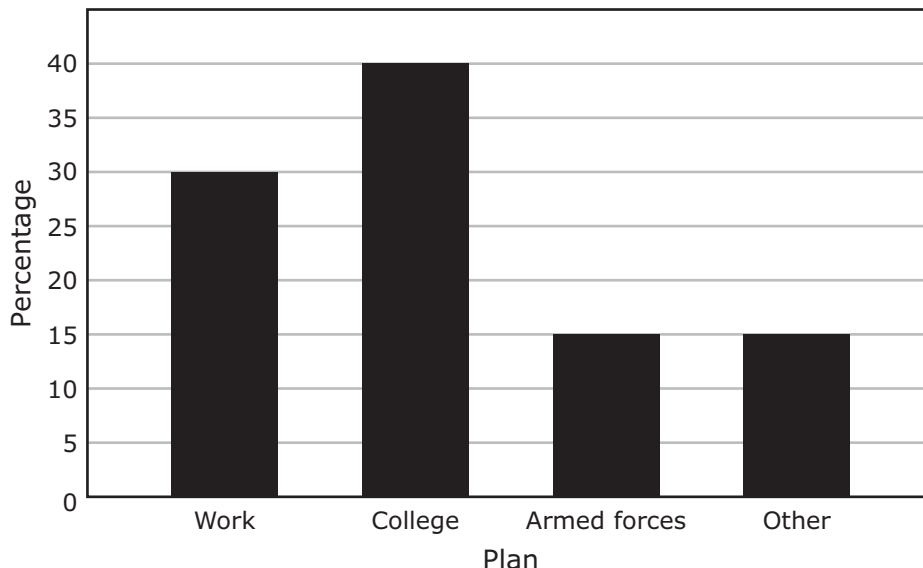
- 12** Students at two high schools were asked about their plans after graduation. The table displays the results for 300 students at Henderson High School.

Henderson High School

Plan	Number of Students	Relative Frequency
Work	96	0.32
College	114	0.38
Armed forces	48	0.16
Other	42	0.14

The bar graph displays the results for 300 students at Johnson High School.

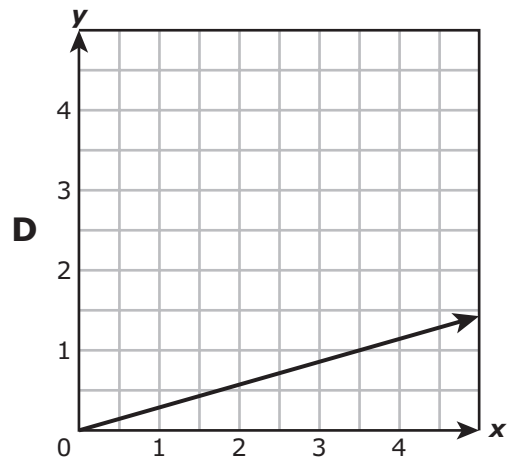
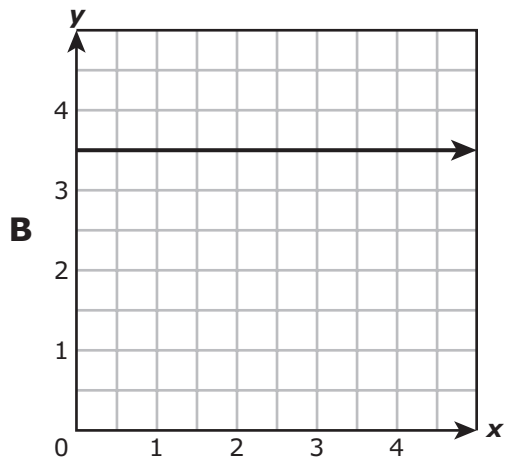
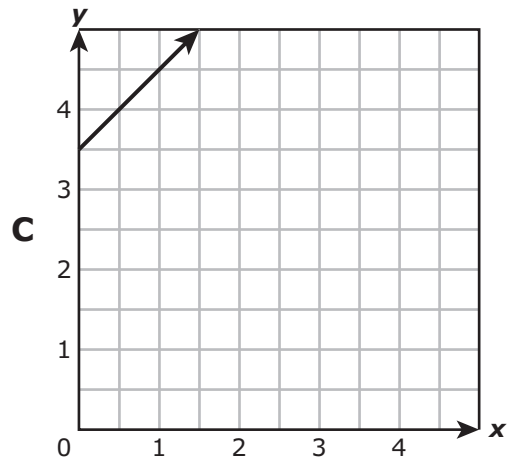
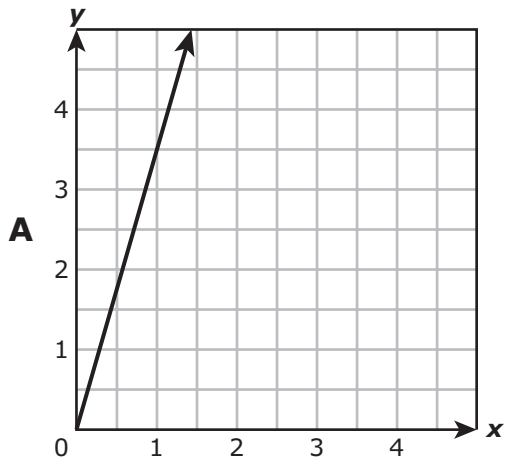
Johnson High School



Which statement about the results from Henderson High School and Johnson High School must be true?

- F** The number of students who selected "armed forces" or "other" is greater for Henderson High School than for Johnson High School.
- G** College is associated with the mode for each high school.
- H** The number of students who selected "work" is greater for Johnson High School than for Henderson High School.
- J** There is no mode associated with either high school.

- 13** Which graph best represents the relationship between x and y in the equation $y = 3.5x$?



- 14** At a workplace 153 of the 225 employees attended a meeting. Which statement shows values that are all equivalent to the fraction of employees who attended the meeting?

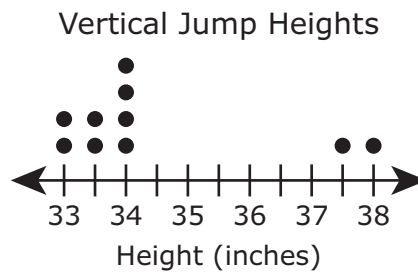
F $\frac{153}{225} = \frac{17}{25} = 0.68 = 68\%$

G $\frac{225}{153} = \frac{25}{17} = 1.47 = 147\%$

H $\frac{153}{225} = \frac{51}{75} = 0.51 = 51\%$

J $\frac{225}{153} = \frac{75}{51} = 0.75 = 75\%$

- 15 The dot plot shows the vertical jump height for each of 10 athletes.

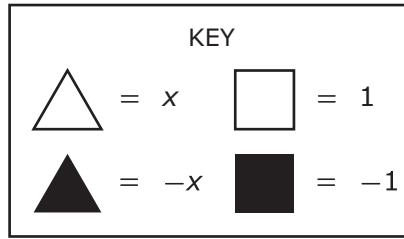
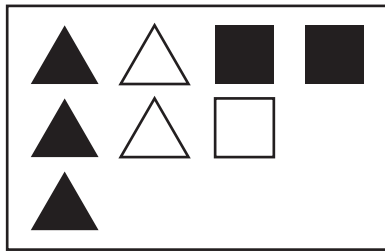


Which statement is supported by the data in the dot plot?

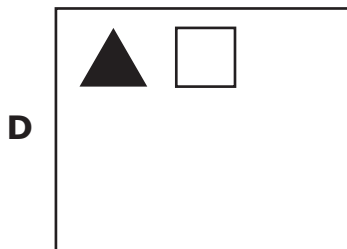
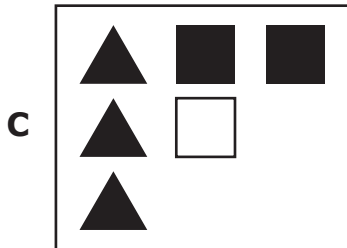
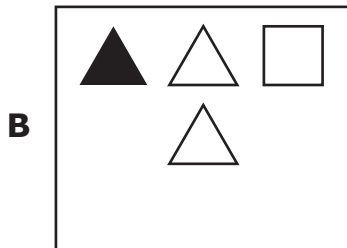
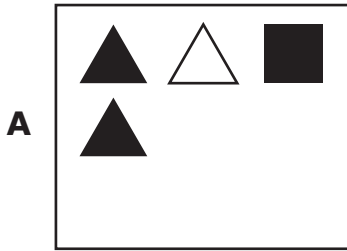
- A** The number of athletes with a vertical jump height of $33\frac{1}{2}$ inches is less than the number of athletes with a vertical jump height of $37\frac{1}{2}$ inches and 38 inches.
- B** The number of athletes with a vertical jump height of 34 inches is $\frac{1}{4}$ of the total number of athletes.
- C** The least number of athletes had a vertical jump height of 33 inches.
- D** The number of athletes with a vertical jump height of $33\frac{1}{2}$ inches is $\frac{1}{5}$ of the total number of athletes.

- 16** Which situation is best represented by the inequality $\frac{x}{12} \geq 7$?
- F** Emily divided x crayons into 12 boxes, and there were at most 7 crayons in each box.
 - G** Emily separated x books on 12 shelves, and there were more than 7 books on each shelf.
 - H** Emily poured x ounces of juice into 12 cups, and each cup had no less than 7 ounces of juice.
 - J** Emily shared x cookies among 12 people, and each person received less than 7 cookies.

17 The model represents an expression.



Which model represents an equivalent expression?



18 Avery and Mason are both swimming laps in the same swimming pool.

- Avery can swim 3 laps in 2 minutes.
- Mason can swim 5 laps in 4 minutes.

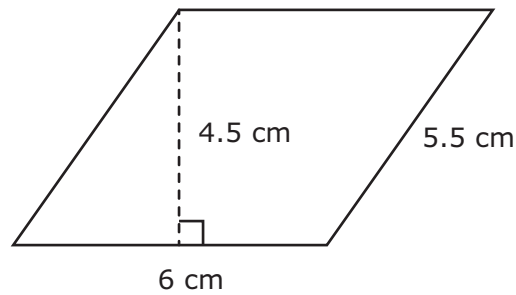
Based on these rates, which statement is NOT true?

- F** Avery can swim 6 laps in 4 minutes.
- G** Mason can swim 2.5 laps in 2 minutes.
- H** Avery can swim 2 laps farther than Mason in 8 minutes.
- J** Mason can swim 0.5 lap farther than Avery in 2 minutes.
-

19 Which expression is equivalent to $6 \div \frac{2}{5}$?

- A** $\frac{1}{6} \cdot \frac{2}{5}$
- B** $6 \cdot \frac{5}{2}$
- C** $\frac{1}{6} \div \frac{2}{5}$
- D** $6 \div \frac{5}{2}$

20 The dimensions of a parallelogram are given in centimeters.



What is the area of the parallelogram in square centimeters?

- F** 33 cm^2
 - G** 23 cm^2
 - H** 27 cm^2
 - J** 16 cm^2
-

21 Julie had \$237 to spend. She returned a calculator and received a \$128 refund. She then bought a chair for \$62.

How much money in dollars and cents did Julie have to spend after buying the chair?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

22 Which expression is equivalent to $38(251m - 45)$?

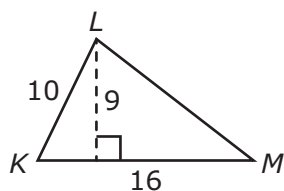
F $38 \cdot 251m - 38 \cdot 45$

G $38(206m)$

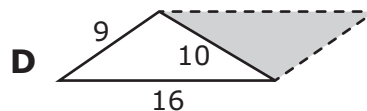
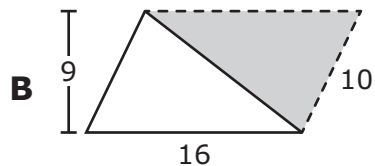
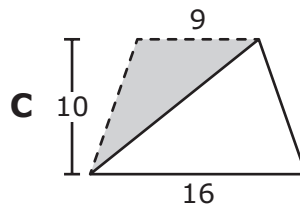
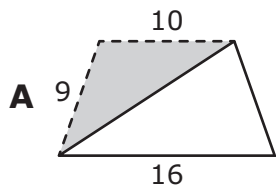
H $-7(251m)$

J $38 \cdot 251m - 45$

23 Triangle KLM is shown with dimensions given in units.



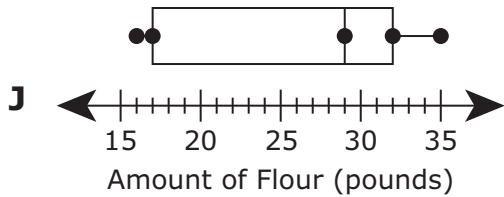
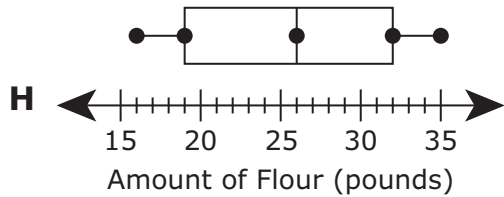
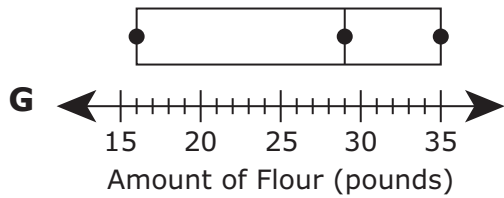
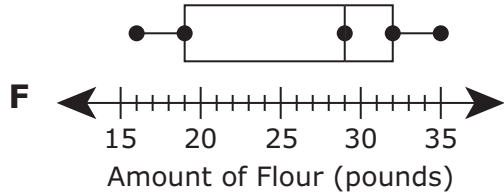
Which figure best models the area formula for triangle KLM ?



- 24** The list shows the amount of flour in pounds used by a bakery each day for 15 days.

16, 17, 18, 19, 20, 23, 24, 29, 30, 31, 32, 32, 32, 32, 35

Which box plot best displays a summary of these data?



- 25** The table shows the total numbers of calories a person used while exercising.

Calories Used

Time (hours)	0	1	2	3	4
Number of Calories Used	0	267	534	801	1,068

Which list shows only the dependent quantities from the table?

- A** 0, 1, 2, 3, 4
 - B** 0, 1, 267, 2, 534
 - C** 0, 267, 534, 801, 1,068
 - D** None of these
-

- 26** Kelli walks no more than 25 dogs on Mondays. Ms. Lincoln has 5 dogs that Kelli walks. The inequality shown can be used to find x , the number of dogs Kelli can walk on Monday in addition to Ms. Lincoln's dogs.

$$x + 5 \leq 25$$

Which inequality represents all possible values of x ?

- F** $x \geq 20$
- G** $x \leq 20$
- H** $x \geq 30$
- J** $x \leq 30$

- 27** There are 18 floors in a building. Each floor has the same number of offices. Altogether there are 396 offices in the building.

Which equation can be used to find f , the number of offices on each floor of this building?

- A** $18 - f = 396$
- B** $18f = 396$
- C** $\frac{f}{18} = 396$
- D** $18 + f = 396$
-

- 28** Which statement is true for a credit card but NOT true for a debit card?

- F** A cardholder must use a personal identification number (PIN) when making purchases.
- G** A cardholder will have money withdrawn from an associated checking account when making purchases.
- H** A cardholder will be charged interest on a purchase unless the balance on the card is paid in full at the end of the billing period.
- J** A cardholder can use an automated teller machine (ATM) to withdraw money.

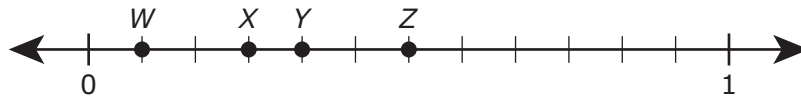
- 29** Susie paid $\frac{2}{5}$ of the price of her movie ticket. Her parents paid the remaining portion of the movie ticket price.

What decimal is equivalent to the fraction of the price of the movie ticket Susie paid?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

- 30** Taylor and Raimi each earn an hourly wage. Taylor earns \$308 for working 14 hours. Raimi earns \$288 for working 12 hours. Which statement is true?
- F** Taylor earns more per hour than Raimi.
 - G** Raimi earns more per hour than Taylor.
 - H** Raimi earns \$26.80 per hour.
 - J** Taylor earns \$21.34 per hour.

- 31** Four points are plotted on the number line.



Which point best represents $33\frac{1}{3}\%$ of the distance between 0 and 1?

- A** Point *W*
 - B** Point *X*
 - C** Point *Y*
 - D** Point *Z*
-

- 32** Mr. Estrada's car can travel no more than 510 miles on one full tank of gasoline. After filling up the tank with gasoline, he traveled 194 miles in the car.

Which inequality represents all possible values of m , the number of miles Mr. Estrada can travel in the car with the remaining gasoline in the tank?

- F** $m \geq 484$
- G** $m \geq 316$
- H** $m \leq 484$
- J** $m \leq 316$

33 The table shows the prices of 6 different backpacks at a store.

Backpack
Prices

Price (dollars)
14
24
24
36
40
45

What is the median price of the backpacks in dollars and cents?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

34 Which expression is equivalent to $1,000 + 196$?

F $10^2 + 7 \cdot 28$

G $10^3 + 14^2$

H $100^3 + 7 \cdot 28$

J $100^2 + 14^2$

- 35** A veterinarian examined 32 animals on Thursday. Of the animals she examined, 25% of them were dogs.

How many dogs did the veterinarian examine on Thursday?

- A** 24
 - B** 7
 - C** 25
 - D** 8
-

- 36** The table shows the median annual salaries for two different jobs.

Median Annual Salaries

Job	Median Annual Salary (dollars)
Marketing Manager	115,750
Financial Analyst	76,950

Based on the information in the table, how much more money would a marketing manager earn than a financial analyst over 10 years?

- F** \$38,800
- G** \$1,927,000
- H** \$388,000
- J** \$192,700

37 Akeem created a list by correctly putting a group of fractions, percentages, and decimals in order from least to greatest value. Which list could be the one Akeem created?

A 0.21 22% $\frac{1}{4}$ 0.35 38% $\frac{3}{8}$

B 22% 38% 0.21 $\frac{1}{4}$ 0.35 $\frac{3}{8}$

C 22% 38% $\frac{1}{4}$ 0.21 0.35 $\frac{3}{8}$

D 0.21 22% $\frac{1}{4}$ 0.35 $\frac{3}{8}$ 38%

- 38** The stem and leaf plot shows the pressure in pounds per square inch of each bicycle tire in a shop.

Bicycle Tire Pressures

Stem	Leaf
5	0 9 9
6	5
7	2 4 6
8	3 5 7 7 7 8 9
9	1 2 3 4 6 9

5|9 means 59 pounds per square inch.

Which statement is best supported by the data in the stem and leaf plot?

- F** Half of the tire pressures are 75 pounds per square inch or less.
- G** There are more tires with pressures from 90 to 99 pounds per square inch than with pressures from 80 to 89 pounds per square inch.
- H** Three times as many tires have pressures from 50 to 59 pounds per square inch as tires that have a pressure of 65 pounds per square inch.
- J** There are more tires with pressures from 70 to 79 pounds per square inch than with pressures from 50 to 59 pounds per square inch.



**STAAR
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