VIRGINIA STANDARDS OF LEARNING

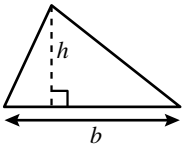
Spring 2010 Released Test

GRADE 7 MATHEMATICS

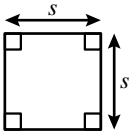
Form M0110, CORE 1

Grade 7 Mathematics Formula Sheet

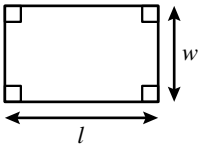
Geometric Formulas



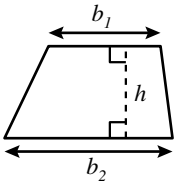
$A = \frac{1}{2}bh$



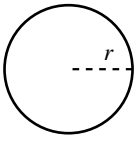
$p = 4s$
$A = s^2$



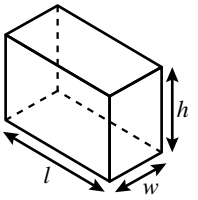
$p = 2l + 2w$
$A = lw$



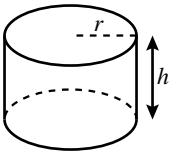
$A = \frac{1}{2}h(b_1 + b_2)$



$C = 2\pi r$
$A = \pi r^2$



$V = lwh$
$S.A. = 2lw + 2lh + 2wh$



$V = \pi r^2 h$
$S.A. = 2\pi rh + 2\pi r^2$

Abbreviations

milligram	mg
gram	g
kilogram	kg
milliliter	mL
liter	L
kiloliter	kL
millimeter	mm
centimeter	cm
meter	m
kilometer	km
square centimeter	cm^2
cubic centimeter	cm^3

ounce	oz
pound	lb
quart	qt
gallon	gal.
inch	in.
foot	ft
yard	yd
mile	mi.
square inch	sq in.
square foot	sq ft
cubic inch	cu in.
cubic foot	cu ft

area	*A*
perimeter	*p*
circumference	*C*
volume	*V*
total surface area	*S.A.*

year	yr
month	mon
hour	hr
minute	min
second	sec

Pi

$\pi \approx 3.14$
$\pi \approx \frac{22}{7}$

Directions

Read each question and choose the best answer.

SAMPLE

One hundred students were asked to name one favorite color. The chart shows the results.

Favorite Colors

Color	Number of Students
Blue	28
Red	21
Purple	11
Green	11
Black	29

What percent of the students named blue?

A 28%
B 29%
C 50%
D 57%

1 Sandy made 9 free throws out of 12 free-throw attempts in a basketball game. What percentage of the free-throw attempts did Sandy make?

A 25%
B 33%
C 57%
D 75%

2 Charlie's Restaurant advertises that 3% of the total amount of money earned on Tuesdays will be donated to a local charity. At this same rate, which statement is most likely true?

F Charlie's Restaurant earned a total of $500 last Tuesday and donated $3.
G Charlie's Restaurant earned a total of $700 last Tuesday and donated $21.
H Charlie's Restaurant earned a total of $3 last Tuesday and donated $100.
J Charlie's Restaurant earned a total of $9 last Tuesday and donated $270.

3 What number is equal to $2 \cdot 8 - 4 \div 4$?

A 2
B 3
C 14
D 15

4 Which expression is equivalent to $^{-}5-(^{-}7)$?

F $^{-}5+7$

G $^{-}5+^{-}7$

H $5-(^{-}7)$

J $^{-}7-(^{-}5)$

5 Michael bought a stereo on sale for 20% off the regular price. The regular price of the stereo was $180. What was the sale price of the stereo?

A $36

B $90

C $144

D $160

6 Tom needs 2 tablespoons of a cleaning product for every 5 quarts of water. How many tablespoons of the cleaning product would he need for 4 quarts of water?

F 1.6

G 2.0

H 2.5

J 10.0

7 The record high temperature for a certain U.S. state is 104°F. The record low temperature for the same state is −14°F. What is the difference between the record high and low temperatures for this state?

A 90°F

B 100°F

C 108°F

D 118°F

Do not turn the page until you are told.

8 Which list is ordered from *least* to *greatest*?

F $\frac{3}{8}, \frac{5}{6}, \frac{2}{9}, \frac{7}{11}$

G $\frac{2}{9}, \frac{3}{8}, \frac{7}{11}, \frac{5}{6}$

H $\frac{7}{11}, \frac{2}{9}, \frac{5}{6}, \frac{3}{8}$

J $\frac{5}{6}, \frac{7}{11}, \frac{3}{8}, \frac{2}{9}$

9 Manuel can paint 5 pictures in 12.5 hours. At this rate, which proportion can be used to find p, the number of pictures Manuel can paint in 8 hours?

A $\frac{5}{8} = \frac{20.5}{p}$

B $\frac{5}{8} = \frac{p}{20.5}$

C $\frac{5}{12.5} = \frac{8}{p}$

D $\frac{5}{12.5} = \frac{p}{8}$

10 The speed of light is approximately 300,000,000 meters per second. What is the speed of light expressed in scientific notation?

F 3.0×10^6 m/s

G 3.0×10^7 m/s

H 3.0×10^8 m/s

J 3.0×10^9 m/s

11 What real number property of multiplication is shown in this equation?

$$\mathbf{3 \cdot 11 \cdot 10 = 3 \cdot 10 \cdot 11}$$

A Inverse property

B Identity property

C Associative property

D Commutative property

12 When simplifying the following, using order of operations, which operation should be performed first?

$$\mathbf{11 \div (12 - 8 \cdot 3) + 2^4}$$

F $11 \div 12$

G $12 - 8$

H $8 \cdot 3$

J 2^4

13 Which number is *less* than 138% ?

A $\frac{13}{8}$

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

C 1.75

D 1.25×10^2

14 Which of the following expressions is equivalent to $4.1(8.5 - 6.2)$?

F $8.5 - 4.1 \cdot 6.2$

G $4.1 \cdot 8.5 - 6.2$

H $4.1 \cdot 8.5 - 4.1 \cdot 6.2$

J $(4.1 + 8.5) - (4.1 + 6.2)$

15 Triangles XYZ and KLM are congruent. What is the ratio of the length of $\overline{XY}$ to the length of $\overline{KL}$?

A $1:1$

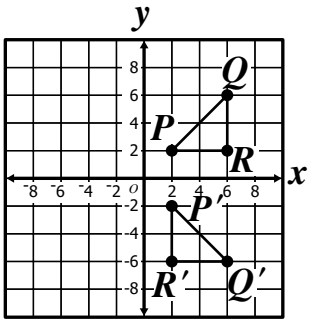
B $1:2$

C $1:3$

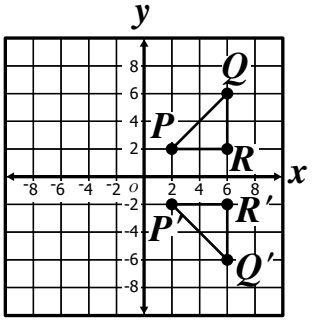
D $1:4$

16 Which grid shows a 90° *counterclockwise* rotation of triangle PQR about the origin?

F



G



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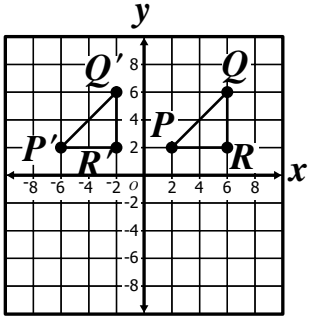

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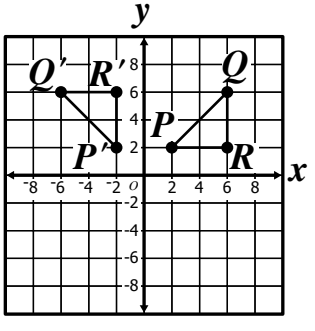
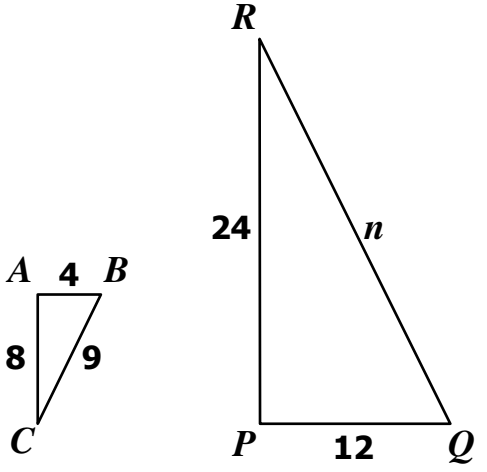


17 In which quadrant is the point (17, 18) located?

A Quadrant I
B Quadrant II
C Quadrant III
D Quadrant IV

18 Triangle ABC is similar to triangle PQR.



Which proportion can be used to find n ?

F $\frac{8}{9} = \frac{n}{12}$

G $\frac{8}{12} = \frac{n}{9}$

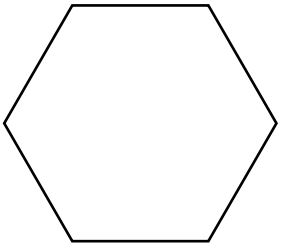
H $\frac{4}{8} = \frac{12}{n}$

J $\frac{4}{9} = \frac{12}{n}$

19 A cylindrical paint can has a diameter of 12 centimeters and a height of 16 centimeters. Which is *closest* to the volume of the paint can in cubic centimeters?

A 603
B 1,206
C 1,809
D 7,235

20 Which of the following is the name for the shape shown?

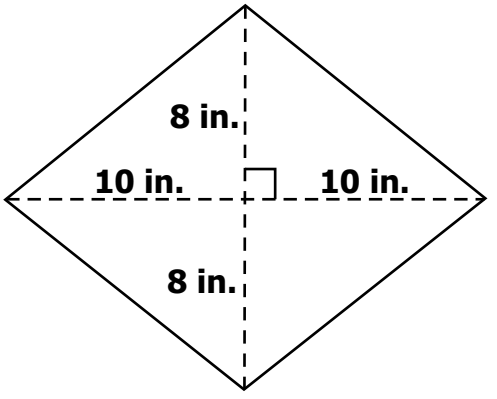


F Octagon
G Hexagon
H Pentagon
J Heptagon

21 Which property is common to all quadrilaterals?

A Four angles
B Four congruent sides
C Opposite sides parallel
D Opposite angles congruent

22 What is the area, in square inches, of this quadrilateral?

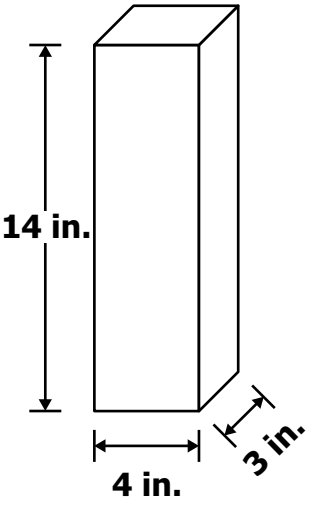


F 80 in.^{2}
G 160 in.^{2}
H 320 in.^{2}
J 324 in.^{2}

23 A trapezoid is a quadrilateral with exactly —

A one pair of congruent sides
B one pair of parallel sides
C four congruent angles
D four congruent sides

24 This diagram shows a rectangular prism.



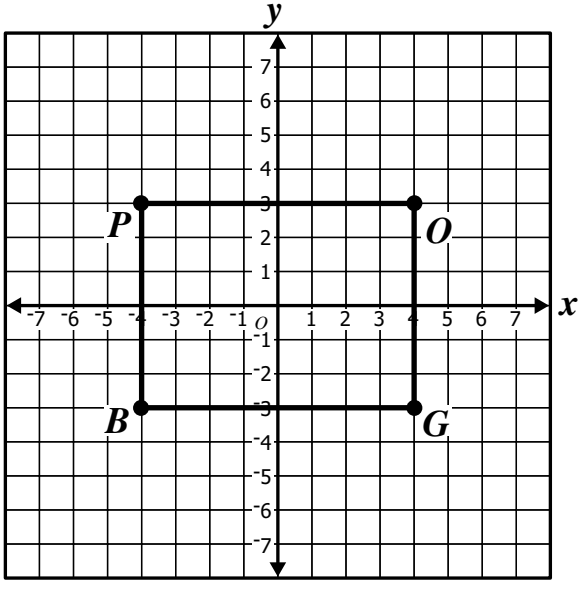
What is the total surface area of this prism?

F 110 square inches
G 168 square inches
H 208 square inches
J 220 square inches

25 Which polygon has 2 times as many angles as a pentagon?

A Decagon
B Nonagon
C Hexagon
D Heptagon

26



Which line segment most likely connects points located at $(^{-}4, 3)$ and $(4, 3)$ on the coordinate grid above?

F $\overline{OG}$

G $\overline{GB}$

H $\overline{PO}$

J $\overline{BP}$

27 The school soccer team is ordering new knee pads for their uniforms. The knee pads come in 4 different colors, 6 sizes, and 2 styles. How many different outcomes of knee pads are available?

A 12

B 24

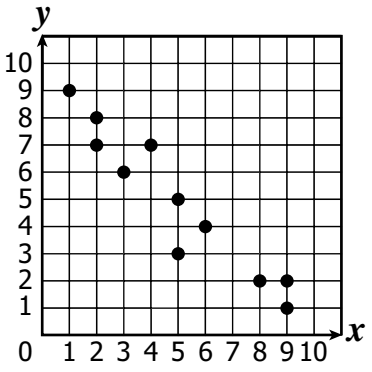
C 40

D 48

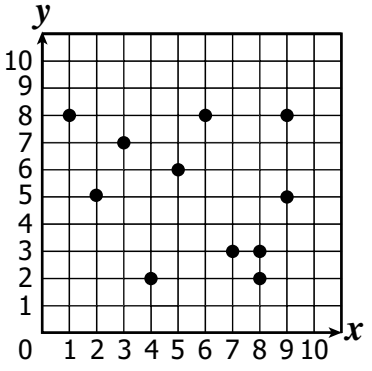
GO ON

28 Which scatterplot *best* displays a positive relationship among the data points?

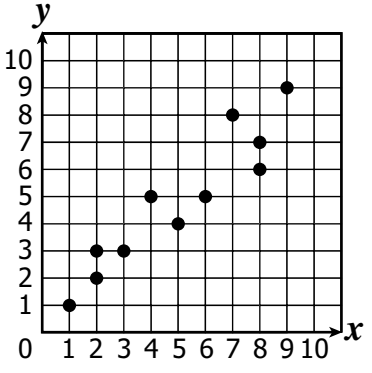
F



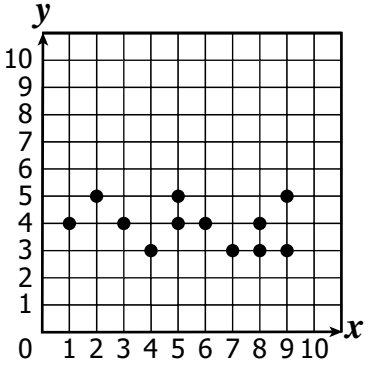
G



H



J



29 The number of sandwiches sold at four stores from Week 1 through Week 5 is shown in this table.

Sandwiches Sold

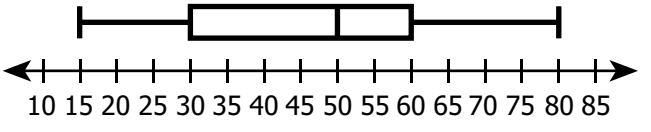
	Store P	Store Q	Store R	Store S
Week 1	100	150	90	92
Week 2	103	147	89	107
Week 3	102	143	88	95
Week 4	110	140	90	85
Week 5	115	138	87	110

Based only on the data in the table, which store is *most* likely to increase its sales of sandwiches in Week 6 ?

A Store P
B Store Q
C Store R
D Store S

30 What is the interquartile range of the box-and-whisker plot?

Music Sales



F 20
G 30
H 50
J 65

31 What is the median of the data shown?

38, 50, 43, 33, 35, 30, 64, 43, 41

A 34
B 35
C 41
D 43

GO ON

32 The students in Mr. Denton's class earned the following scores on a fitness test.

430, 620, 510, 500, 480, 490, 660, 480, 530, 550, 590, 660, 330, 380

Which frequency table *best* displays these data?

F

Score Range	Frequency
300 to 399	2
400 to 499	5
500 to 599	4
600 to 699	3

G

Score Range	Frequency
300 to 399	2
400 to 499	4
500 to 599	5
600 to 699	3

H

Score Range	Frequency
300 to 399	2
400 to 499	3
500 to 599	5
600 to 699	3

J

Score Range	Frequency
300 to 399	2
400 to 499	4
500 to 599	5
600 to 699	2

33 A bag has 15 white marbles and 12 blue marbles. Allison will randomly select 1 marble from this bag. What is the probability that she will select a blue marble?

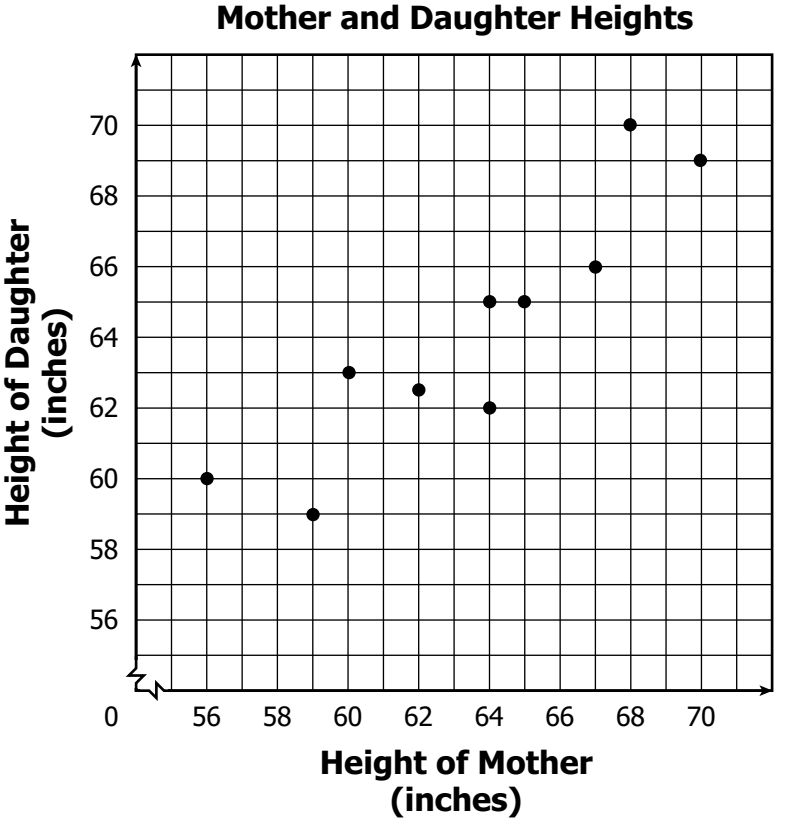
A $\frac{5}{4}$

B $\frac{4}{5}$

C $\frac{5}{9}$

D $\frac{4}{9}$

34 This scatterplot shows the relationships between the heights of 10 pairs of mothers and daughters.



Based on the scatterplot, which of the following statements is true?

F The tallest mother has the tallest daughter.

G The shortest mother has the shortest daughter.

H Taller mothers tend to have taller daughters.

J Shorter mothers tend to have taller daughters.

35 The table shows the number of catches for each of five members on a softball team.

Softball Catches

Name	Number of Catches
Magdalena	9
Liliana	10
La Toya	6
Betty	12
Chandi	10

Coach Hart calculated the mean, median, mode, and range for these data. He realized that he forgot to include Louise's 11 catches in the table. If Coach Hart now includes Louise's data with the data for the other five members, which of the following statistical measures would change from his original calculations?

A Mean

B Median

C Mode

D Range

36 Kenan recorded the outcomes he got when he flipped a fair coin 30 times.

Kenan's Coin Flips

Heads up	Tails up
19	11

If he flips the same coin 300 *more* times, then he should expect that for these 300 flips —

F less than 60 flips will land tails up

G close to 150 flips will land heads up

H between 250 and 300 flips will land tails up

J more than 250 flips will land heads up

37 Randall wants to buy a pizza. He can select from 5 different sizes, 4 types of crust, and 12 toppings for his pizza. Which of the following shows how to find all the different possible choices of 1 size, 1 crust, and 1 pizza topping Randall can buy?

A $5 \cdot 4 \cdot 12$

B $5 \cdot 4 + 12$

C $5 \cdot (4 + 12)$

D $5 + 4 + 12$

38 This table shows ticket sales for the Taylor Middle School band concert.

Band Concert Tickets

Day	Number of Tickets Sold
Monday	528
Tuesday	632
Wednesday	286
Thursday	190
Friday	826

How many tickets must be sold on Saturday to make the median and the mode the same?

F 190
G 286
H 528
J 826

39 Charles worked for 12 hours on Wednesday. This was 3 times as long as he worked on Tuesday. How many hours did Charles work on Tuesday?

A 4
B 9
C 15
D 36

40 Which table contains *only* values that satisfy the following?

$$y = 2x$$

F

x	y
0	2
2	4
4	6

G

x	y
0	0
2	1
4	2

H

x	y
0	1
2	4
4	16

J

x	y
0	0
2	4
4	8

41 What value of x makes $-4x = 12$ true?

A -48
B -3
C 3
D 16

42 How is "ten less than the square of a number, a," expressed algebraically?

F $a^2 - 10$

G $10 - a^2$

H $2a - 10$

J $10 - 2a$

43 The sum of a number and -13 is -7. What is the number?

A -20
B -6
C 6
D 20

GO ON

44 Which phrase is represented by $3(8-n)+2$?

F The sum of two and three times the quotient of eight and a number, n

G The sum of two and three times the difference between a number, n, and eight

H Two more than the difference between three times a number, n, and eight

J Two more than three times the difference between eight and a number, n

45 Which symbol can be placed in the box to make the following an expression?

$$12-3x\square 5$$

A $\leq$

B $>$

C $=$

D $+$

46 Gloria placed 2 apples into each of 14 boxes. Let a represent the total number of apples she had. Which of the following *best* represents this situation?

F $a = \frac{14}{2}$

G $a = 14 \cdot 2$

H $a = 14 + 2$

J $a = 14 - 2$

47 Which word best describes $8z - 5 < 18$?

A Variable
B Equation
C Inequality
D Expression

48 What is the solution to $d - 10 = {}^{-}30$?

F $^{-}40$
G $^{-}20$
H 20
J 40

GO ON

49 Which sequence is a geometric sequence?

A 1, 2, 4, 8, . . .
B 2, 4, 6, 8, . . .
C 3, 7, 11, 15, . . .
D 4, 8, 12, 16, . . .

50 Which of the following represents the sentence shown?

"Twice a number, n, decreased by six is fourteen."

F $2n - 6 = 14$
G $2n + 6 = 14$
H $2(n - 6) = 14$
J $2 + n - 6 = 14$

STOP