

Test Booklet

Subject: MA, Grade: 10
SBA 2012 Grade 10 Math Practice Test

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District: Alaska Released Tests
Printed: Friday September 07, 2012

- 1 Which property does the equation

$$24(70 + 5) = 24(70) + 24(5)$$

illustrate?

- A associative
 B commutative
 C distributive
 D identity
- 2 Mr. Radke took a survey and found the mean, mode, median, and range of fishing-boat lengths in his community. Which measure represents the fishing-boat length most often found?

- A mean
 B median
 C mode
 D range

- 3 What does the expression

$$0.5 \times 6 \times 4.5 + 10.5^2 + 6^2$$

equal?

- A 46.5
 B 135.75
 C 159.75
 D 285.75
- 4 Keisha is 6 feet tall. How tall, to the nearest meter, is Keisha?

- A 2
 B 3
 C 9
 D 20

- 5 George keeps track of the shots on goal that his hockey team takes each game. The table below shows the data.

Shots on Goal per Game

Game	Shots on Goal
1	3
2	5
3	6
4	8
5	7
6	8
7	9
8	9
9	10
10	11

Based on the trend in the table, which is the **best** prediction of shots on goal for the next game?

- A 3
 B 7
 C 12
 D 22
- 6 Which is the prime factorization of $(abc)(acd)(bc)$?
- A $a^2b^2c^3d$
 B $a^2b^2c^3d^2$
 C $a^2b^2c^2d$
 D a^2bc^2d

- 7 The data below shows the number of points Marie's basketball team scored in 10 games.

57, 98, 78, 76, 78,
87, 96, 54, 68, 69

Which frequency distribution table shows the scores?

BASKETBALL TEAM SCORES

Scores	Frequency
50-59	2
60-69	2
70-79	1
80-89	3
90-99	2

A

BASKETBALL TEAM SCORES

Scores	Frequency
50-59	2
60-69	2
70-79	3
80-89	1
90-99	1

C

BASKETBALL TEAM SCORES

Scores	Frequency
50-59	2
60-69	2
70-79	3
80-89	1
90-99	2

B

BASKETBALL TEAM SCORES

Scores	Frequency
50-59	2
60-69	2
70-79	2
80-89	1
90-99	3

D

- 8 A school has 1,200 concert tickets for sale. Some of the tickets are for reserved seats (r), and the rest are for general admission (g). At most, 500 reserved-seat tickets can be sold. Which pair of inequalities models the number of tickets that can be sold?

A $r + g \geq 1,200$
 $r \geq 500$

B $r + g \geq 1,200$
 $r \leq 500$

C $r + g \leq 1,200$
 $r \geq 500$

D $r + g \leq 1,200$
 $r \leq 500$

9 Harold found a ripe strawberry on 5 out of every 8 plants he checked. On what percent of the plants did Harold find a ripe strawberry?

- A $\frac{5}{8} \%$
- B $\frac{5}{8} \%$
- C 60 %
- D 62.5 %

Sample
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- 10 The table below shows the sizes and prices of popcorn containers at a theater.

POPCORN PRICES

Size of Container	Price
small	\$2.00
medium	\$2.50
large	\$3.50
extra-large	\$5.00
jumbo	?

The theater owner plans to add a jumbo size popcorn container. To set the price of the jumbo size container, the owner will follow the pattern set by the other 4 popcorn sizes. What will be the price of the jumbo size container?

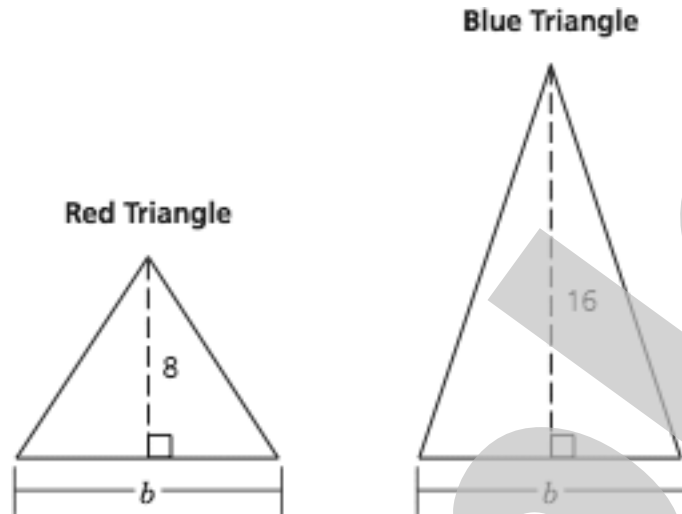
- A \$ 5.50
- B \$ 6.50
- C \$ 7.00
- D \$10.00

- 11 Which is an equivalent expression to

$$3^3 \times 3^3 \times 3?$$

- A 3^6
- B 3^7
- C 3^9
- D 3^{12}

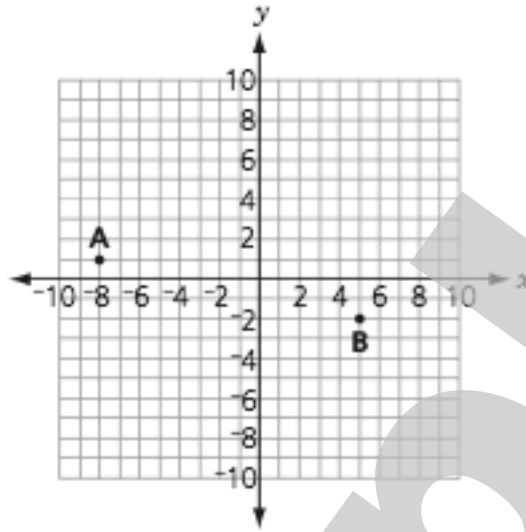
12 Karen had the 2 triangular-shaped pieces of material shown below.



One piece was red and the other was blue. The 2 triangles had bases that were the same length. The red triangle had a height of 8 inches. The blue triangle's height was 16 inches. How many times larger is the area of the blue triangle than the red? Explain your thinking. This item is worth 2 points.

- 13 The coordinate plane below shows Stan's house as point A and Jerry's house as point B.

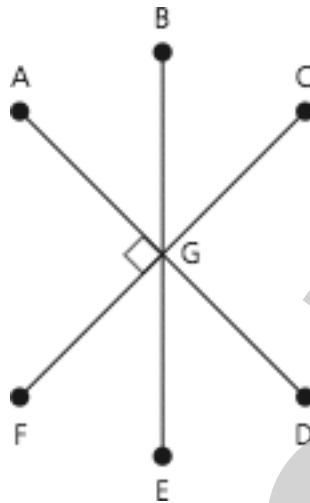
LOCATION OF STAN'S AND JERRY'S HOUSES



What point is halfway between the 2 houses?

- A $(\frac{-3}{2}, \frac{-1}{2})$
- B $(\frac{-1}{2}, \frac{-3}{2})$
- C $(\frac{-13}{2}, \frac{3}{2})$
- D $(\frac{-1}{2}, \frac{-1}{2})$

14 A diagram is shown below.



Which angle must be congruent to $\angle AGB$?

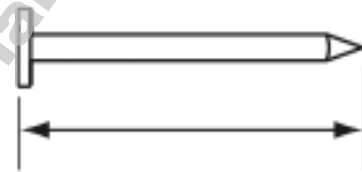
- A $\angle DGE$
- B $\angle EGA$
- C $\angle AGF$
- D $\angle CGD$

15 The cost of renting a boat is \$20 plus \$2.50 per hour, where x is the number of hours of boat rental. Millie wants to spend less than \$50 on the boat rental. Which inequality models this situation?

- A $20x + 2.50 > 50$
- B $20x + 2.50 < 50$
- C $20 + 2.50x > 50$
- D $20 + 2.50x < 50$

Use your ruler to help you solve this problem.

16 A picture of a nail is shown below.

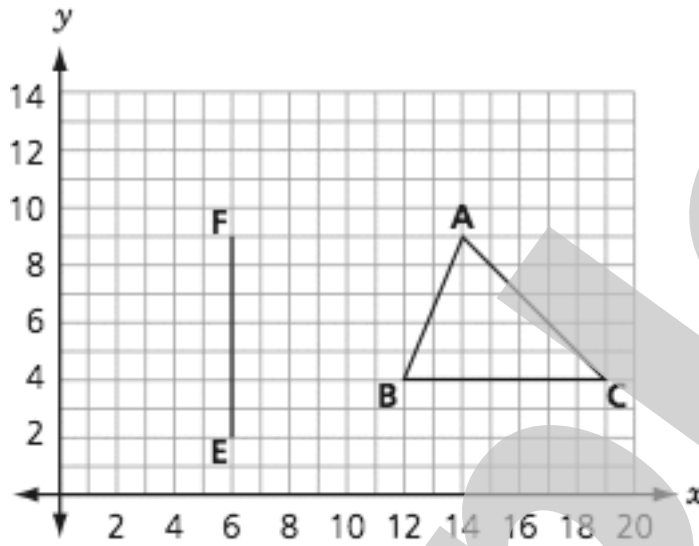


What is the length of the nail to the nearest eighth of an inch?

- A $1\frac{3}{8}$ inches
- B $1\frac{5}{8}$ inches
- C $1\frac{6}{8}$ inches
- D $2\frac{3}{8}$ inches

- 17 Paco's baseball team traveled from Anchorage, Alaska, to Denver, Colorado, to play in a tournament. When it is 10:00 AM in Anchorage, it is 12:00 noon in Denver. Paco's baseball game started at 1:00 PM, Denver time, and lasted 3 hours. What time was it in Anchorage when Paco's baseball game ended?
- A 10:00 AM
B 2:00 AM
C 3:00 AM
D 4:00 AM
- 18 Eddie and Sally put 6 chocolate chip cookies and 4 oatmeal cookies on a plate. Eddie eats 1 of the chocolate chip cookies from the plate. Then Sally takes 1 cookie from the plate without looking. What is the probability that Sally takes an oatmeal cookie?
- A $\frac{4}{10}$
B $\frac{4}{9}$
C $\frac{4}{6}$
D $\frac{4}{5}$
- 19 Two trapezoid-shaped tabletops are congruent to each other.
- $$\text{trapezoid FGHI} \cong \text{trapezoid WXYZ}$$
- Which side of trapezoid WXYZ must be congruent to \overline{GH} ?
- A \overline{XY}
B \overline{WX}
C \overline{YZ}
D \overline{WZ}
- 20 A model of a building is in the shape of a cube with a square pyramid on top. Each edge of the cube is 3 inches, and the square pyramid is 2 inches high with a 3-inch-by-3-inch base. What is the volume of the model in cubic inches?
- A 27
B 33
C 45
D 54
- 21 Ramon surveyed his class and found that 28 out of 32 students preferred hamburgers to hot dogs. What percent is equivalent to $\frac{28}{32}$?
- A 12.5%
B 28%
C 75%
D 87.5%

22 Triangle ABC and \overline{EF} are drawn on the grid below.



What are the coordinates for a point D so triangle ABC and triangle DEF are congruent? Show or explain the work necessary to solve the problem, and write the answer on the line below. This item is worth 2 points.

Show the work.

Sample
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Answer: (_____, _____)

- 23** Andrew is surveying 6 acres of land. There are 43,560 square feet in 1 acre. To estimate how many square feet are in 6 acres of land, he multiplied 6 by 40,000. Which statement about Andrew's estimate is true?
- A** It is less than the actual number of square feet by more than 24,000 square feet.
 - B** It is less than the actual number of square feet by fewer than 24,000 square feet.
 - C** It is greater than the actual number of square feet by more than 24,000 square feet.
 - D** It is greater than the actual number of square feet by fewer than 24,000 square feet.
- 24** Jack is using the plans shown below to build a deck.



Key
 $\frac{1}{4}$ inch = 1.5 feet

Based on Jack's plans, what will be the actual length of the deck?

- A** 3.25 feet
- B** 13 feet
- C** 15 feet
- D** 19.5 feet

25 Penny and Jerome are both saving money to buy new snowshoes. After x weeks, Penny's total savings (y) can be represented by the equation $y = 15x + 25$. Jerome's total savings (y) after x weeks can be represented by the equation $y = 10x + 25$. Which sentence **best** describes the lines represented by these 2 equations?

- A** The equations represent intersecting, but not perpendicular, lines.
- B** The equations represent perpendicular lines.
- C** The equations represent parallel lines.
- D** The equations represent the same line.

26 Which is the greatest common factor (GCF) of 36 and 78?

- A** 4
- B** 6
- C** 9
- D** 13

27 The table below shows the price of movie tickets.

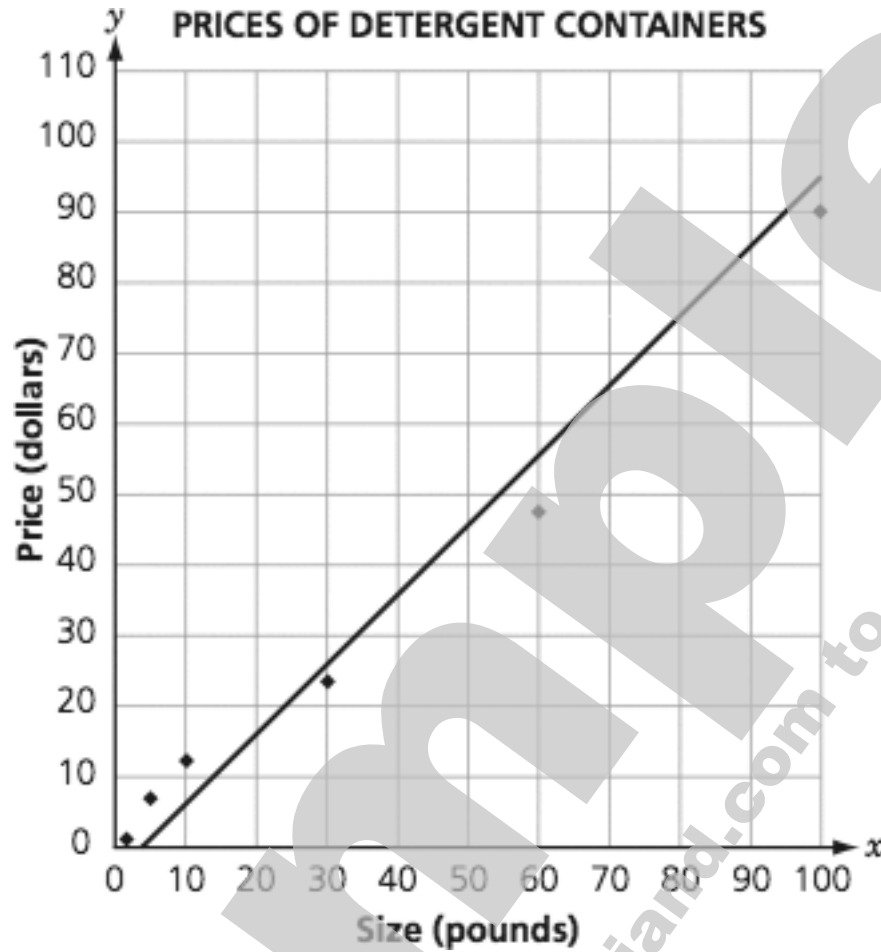
MOVIE TICKET PRICES

Number of Tickets (t)	Price (p)
1	\$ 6.50
3	\$19.50
6	\$39.00
8	\$52.00

Which equation can be used to find the price, p , of t tickets?

- A $p = 6.50t$
- B $p = 6.50 \div t$
- C $p = 13t$
- D $p = 13 - 6.50t$

- 28 The price of a container of detergent varies with the size of the container. On the graph below, the sizes and prices of several containers have been plotted, and the line of best fit has been drawn.



Using the line of best fit, which is the **best** prediction for the price of a 75-pound container of detergent?

- A \$ 60
- B \$ 70
- C \$ 80
- D \$ 100

- 29 Tori knows that $k^3 = 216$.

What is the value of k ?

- A $\sqrt[3]{216}$
 B $216 \div 3$
 C 216×3
 D 216^3
- 30 The general form of a linear equation is $Ax + By + C = 0$. Which shows the general form of the equation solved for y ?
- A $y = \frac{A}{B}x + C$
 B $y = \frac{A}{C}x + B$
 C $y = \frac{-Ax + C}{B}$
 D $y = \frac{-Ax - C}{B}$
- 31 Brandon measured an outside wall of his house with a yardstick. The area of the wall was 78 square yards. What is the area of the wall in square feet?
- A 234
 B 468
 C 702
 D 924

- 32 Mrs. Dolan wants to print 2 pages on 1 piece of paper. The table below shows the relationship between the number of pages and the pieces of paper needed.

Printing Materials

Number of Pages	Pieces of Paper Needed
4	2
8	4
12	6
16	8

How many pieces of paper are needed to print 26 pages?

- A 13
 B 24
 C 28
 D 52
- 33 Denali National Park covers approximately 6,075,030 acres. What is the place value of the 6 in the number 6,075,030?
- A hundred thousands
 B hundred-thousandths
 C millions
 D millionths
- 34 In June, the average temperature in Vancouver is 15 degrees Celsius (C). What is this temperature in degrees Fahrenheit (F), to the nearest degree? ($F = \frac{9}{5}C + 32$)
- A -31
 B -9
 C 27
 D 59

35 Len has 3 yellow baseball hats and 2 blue baseball hats. He picks 1 of the hats without looking. What is the probability that Len picks a blue baseball hat?

- A** $\frac{2}{5}$
- B** $\frac{1}{2}$
- C** $\frac{3}{5}$
- D** $\frac{2}{3}$

36 The revenue earned by Susan's business is determined by the equation

$$R = 0.025x^2 + 4x$$

where x is the number of items sold. What would be the revenue for selling 2,000 items?

- A** \$ 100
- B** \$ 8,100
- C** \$100,004
- D** \$108,000

37 The percent of different types of items sold at Bob’s store for the years 2002 and 2003 are shown in the circle graphs below.



Which table shows the data in the circle graphs?

BOB’S STORE SALES

A

Item	Percent in 2002	Percent in 2003
food	25	50
clothing	25	30
electronics	50	20

BOB’S STORE SALES

C

Item	Percent in 2002	Percent in 2003
food	33	50
clothing	33	20
electronics	33	30

BOB’S STORE SALES

B

Item	Percent in 2002	Percent in 2003
food	30	10
clothing	30	20
electronics	40	30

BOB’S STORE SALES

D

Item	Percent in 2002	Percent in 2003
food	30	50
clothing	30	30
electronics	40	20

38 A pizza has been divided into 8 equal pieces. Frances eats 2 pieces and Kay eats 3 pieces. Which equation models the fraction of the total pizza they have eaten?

- A $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$
- B $\frac{2}{8} + \frac{3}{8} = \frac{5}{16}$
- C $\frac{1}{2} + \frac{3}{8} = \frac{5}{6}$
- D $\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$

39 Which is equivalent to $(-3m^9)(4m^{-5})$?

- A $-12m^{-4}$
- B $-12m^4$
- C $\frac{4}{3m^4}$
- D $\frac{-3m^4}{4}$

- 40 The cashier gave Ben 3 five-dollar bills, 1 quarter, 2 dimes, and 1 penny in change. How much change did Ben receive?

A \$ 3.36
B \$ 3.46
C \$15.36
D \$15.46

- 41 The table below shows the results of a survey of 200 people attending a hockey game.

CHOICES FOR SOUVENIRS

Item	Number of People
cap	68
jersey	19
pennant	22
program	91

The attendance for the hockey game is about 25,000 visitors each game. Based on the table, how many people out of 25,000 could be expected to buy a pennant?

- A 1,375
B 1,650
C 2,750
D 3,850
- 42 The expression below can be used to find the number of square feet of carpet that Dion bought for his house.

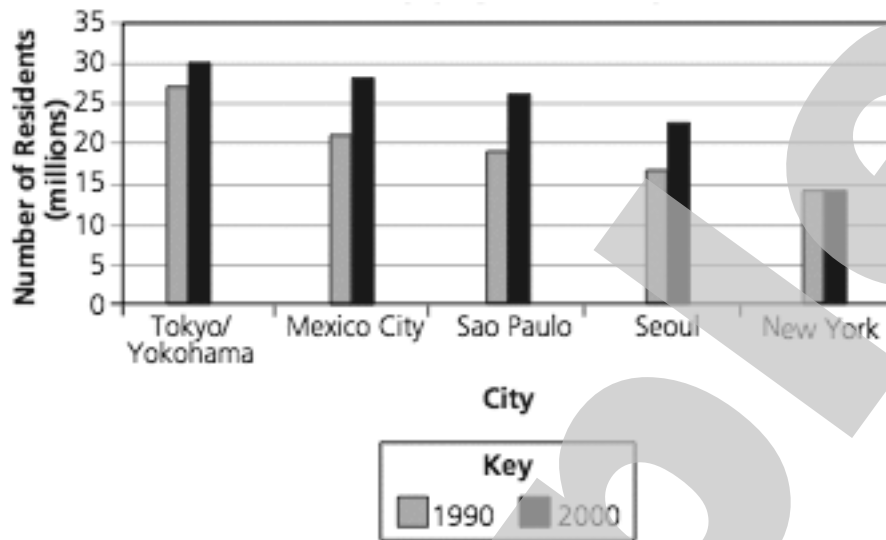
$$18 \times 15 + 15^2 + 10^2$$

How many square feet of carpet did Dion buy for his house?

A 320
B 358
C 595
D 895

43 The populations for 1990 and 2000 of the 5 largest urban areas in the world are shown in the graph below.

LARGEST URBAN AREAS



Which statement about change in the number of residents of each urban area from 1990 to 2000 is correct based on the data in the graph?

- A In each of the 5 urban areas, the population increased by more than 1 million.
- B Tokyo/Yokohama had the largest increase in the number of residents.
- C New York had a larger increase in the number of residents than Seoul.
- D The number of residents of Mexico City and Sao Paulo increased by about the same amount.

44 How many vertices does a cube have?

- A 4
- B 6
- C 8
- D 12

- 45** The amount of precipitation in Juneau for the month of March was 4 inches. In April, the amount of precipitation in Juneau decreased by 20% from the amount that fell in March. How many inches of precipitation did Juneau get in April? Show the work necessary to solve the problem, and write the answer on the line below. This item is worth 2 points.

Show the work.

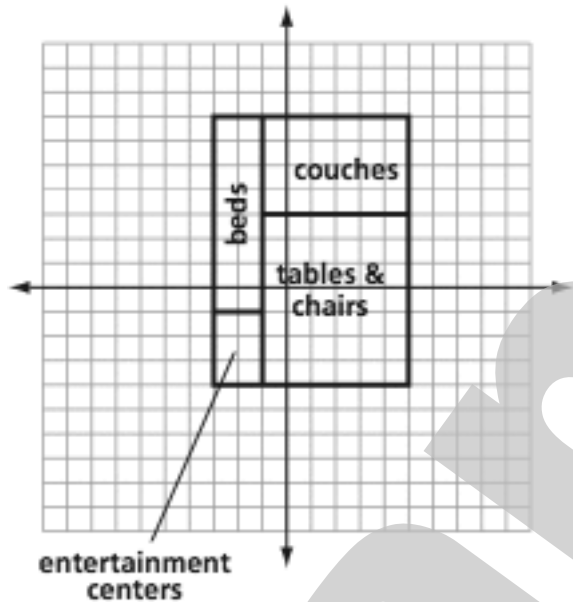
Answer: _____ inches

- 46** Charlotte scores an average of 10 points per game. On Monday she scored 2×10 points. On Tuesday she scored $\frac{1}{2} \times 10$ points. How do her points from Monday and Tuesday compare to her average?
- A** The number of points scored both Monday and Tuesday were lower than average.
 - B** Monday's points were higher than average and Tuesday's points were lower than average.
 - C** Monday's points were lower than average and Tuesday's points were higher than average.
 - D** The number of points scored both Monday and Tuesday were higher than average.

47 Ethan left Homer at 10:45 AM. He arrived in Anchorage 5.5 hours later. What time was it when Ethan arrived in Anchorage?

- A 3:45 PM
- B 4:15 PM
- C 4:35 PM
- D 5:15 PM

48 A furniture store has a warehouse for storing furniture. The map below shows how the warehouse is divided into separate storage areas for 4 different kinds of furniture.



Which 2 storage areas have similar shapes?

- A beds and entertainment centers
- B couches and tables & chairs
- C entertainment centers and tables & chairs
- D couches and entertainment centers

49 Kerry scored a total of 205 points last season by making a total of 120 baskets. Some of the baskets were 1-point free throws (t), and the rest were 2-point field goals (g). Which pair of equations models this situation?

- A $t + 2g = 205$
 $t + g = 120$
- B $t + g = 205$
 $t + 2g = 120$
- C $t + g = 205$
 $t + g = 120$
- D $t + 2g = 205$
 $t + 2g = 120$

50 Ivan compared the interest rates offered by 4 different banks as shown below.

$5\frac{1}{8}\%$, 5.15% , 5.045% , $5\frac{1}{3}\%$

- A $5\frac{1}{8}\%$, 5.15% , $5\frac{1}{3}\%$, 5.045%
- B 5.045% , $5\frac{1}{8}\%$, 5.15% , $5\frac{1}{3}\%$
- C 5.045% , $5\frac{1}{3}\%$, 5.15% , $5\frac{1}{8}\%$
- D 5.15% , $5\frac{1}{8}\%$, 5.045% , $5\frac{1}{3}\%$

- 51** The table below shows the number of hours Tory worked (h) and the total amount of money (m) she earned.

Tory's Earnings

Hours (h)	Money (m)
2	17.50
3	23.75
4	30.00
5	36.25

Which equation represents the information from the table above?

- A** $h = 6.25m$
- B** $h = 6.25m + 5$
- C** $m = 6.25h$
- D** $m = 6.25h + 5$
- 52** A fair coin is tossed 100 times resulting in 67 heads and 33 tails. Which statement **best** describes the result of the next toss?
- A** Either heads or tails, because the outcome is independent of previous trials.
- B** Either heads or tails, depending on the results of the previous coin toss.
- C** Heads, because it has been heads so many times before.
- D** Tails, because fewer tails have come up before.

- 53** Ron had 5 cubes. Each of Ron's cubes had an edge length of 3 inches. He used the expression $5(3^3)$ to find the total volume.

Which is equivalent to $5(3^3)$?

- A** 45
- B** 135
- C** 375
- D** 3,375

- 54 Ted has 8 cereal bowls in his kitchen. There are 3 green bowls, 2 pink bowls, and 3 yellow bowls. He randomly chooses 1 of these bowls each day for his cereal. Each bowl is washed and replaced before the next day. The table below shows Ted's cereal bowl color use for the past 100 days. This item is worth 4 points.

CEREAL BOWL COLOR USE

Color	Number of Times Used
green	42
pink	20
yellow	38

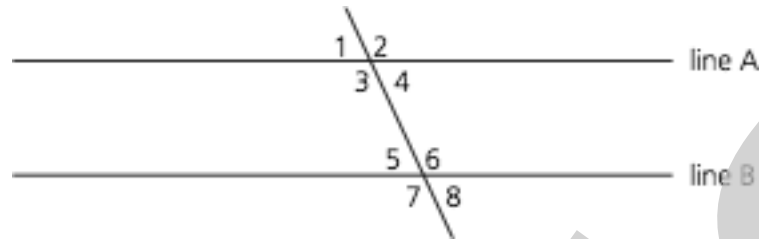
What is the theoretical probability of choosing a pink bowl? Explain your thinking and write the answer on the line below.

Answer: _____

What is the experimental probability of choosing a pink bowl? Explain your thinking and write the answer on the line below.

Answer: _____

55 In the figure below, lines A and B are straight and parallel to each other.



Which angles must be congruent to $\angle 1$?

- A $\angle 2$ and $\angle 6$
- B $\angle 3$ and $\angle 5$
- C $\angle 4$, $\angle 6$, and $\angle 7$
- D $\angle 4$, $\angle 5$, and $\angle 8$

56 How many square inches are equal to 6 square feet?

- A 54
- B 72
- C 216
- D 864

57 The table below shows how many pages are left to copy at different times.

PAGE COPYING TIME

Seconds Spent Copying	Pages Remaining
0	60
10	49
20	38
30	27
40	?

How many pages are left to copy at the end of 40 seconds?

- A 11
- B 13
- C 16
- D 33

58 An economist used the equation $y = 0.05x^2 + 3.63x^2 + 37.68$ to model changes in consumer prices. For a given value of y , which method should be used to solve the equation for x ?

- A distance formula
- B factoring
- C Pythagorean theorem
- D quadratic formula

59 Jeremy works at a bookstore. He gets paid \$30 per day and \$2 for every book he sells. He determines his total daily pay, D , with the equation below.

$$D = 30 + 2b, \text{ where } b \text{ is the number of books he sells}$$

On Monday, Jeremy's total daily pay is \$50. On Tuesday, Jeremy's total daily pay will change to \$35 per day and \$2 for every book he sells. Which statement is true about Jeremy's total daily pay on Tuesday?

- A It will be \$5 more than on Monday.
- B It will be \$35 more than on Monday.
- C It might be less than on Monday.
- D It might be less than \$35.

60 Melanie paddled her kayak for 1.5 hours. She paddled 6 miles. How many miles per hour did Melanie paddle?

- A 0.25 mile per hour
- B 4 miles per hour
- C 4.5 miles per hour
- D 9 miles per hour

61 A sphere had a 6-inch radius (r). What was the volume of the sphere?

- A 24π cubic inches
- B 32π cubic inches
- C 216π cubic inches
- D 288π cubic inches

62 Which line is parallel to $y = \frac{3}{4}x - 3$?

- A $y = \frac{-3}{4}x + 5$
- B $y = \frac{-4}{3}x + 5$
- C $y = \frac{3}{4}x + 5$
- D $y = \frac{4}{3}x + 5$

- 63 A school published the chart shown below to display their current enrollment.

SCHOOL ENROLLMENT

	Freshmen	Sophomores	Juniors	Seniors
males	12	11	18	14
females	9	11	16	19

What type of graph would **best** display all the data in the chart?

- A double bar graph
B histogram
C line plot
D scatter plot
-
- 64 Gayle's hourly wage is \$8.50. Gayle will be getting a 4% increase in pay at the end of the month. What will be Gayle's hourly wage after her pay increase?
- A \$ 0.34
B \$ 8.16
C \$ 8.84
D \$11.90