# Louisiana Believes

# *i*LEAP Test Items

# Grade    Mathematics

# Spring 2014

Released June 2014

DEPARTMENT of EDUCATION
Louisiana Believes

# iLEAP
## MATHEMATICS REFERENCE SHEET—GRADE 7

Use the information below to answer questions on the Math test.

**Circle**
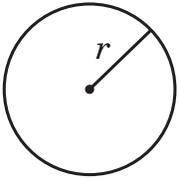
$\pi \approx 3.14$
Area $= \pi r^2$
Circumference $= 2\pi r$

**Rectangle**
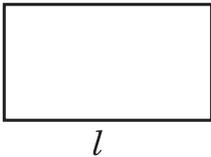
$w$   Area $= lw$
Perimeter $= 2(l + w)$

$l$

**Trapezoid**

$b_1$
$h$   Area $= \frac{1}{2}h(b_1 + b_2)$
$b_2$
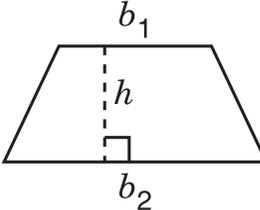
**Triangle**
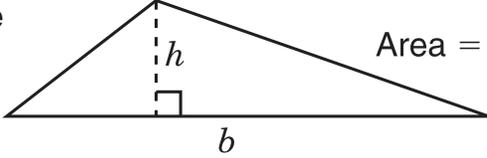
$h$   Area $= \frac{1}{2}bh$
$b$

**Parallelogram**
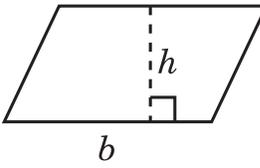
$h$   Area $= bh$
$b$

**Rectangular Prism**
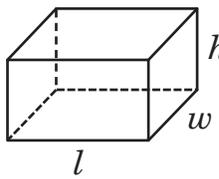
Volume $= lwh$
Volume $= Bh$
$h$         $B = lw$
Surface
$w$  Area $= 2wl + 2lh + 2wh$
$l$

The probability of Sam's spinner landing on a star can be described as unlikely. Which spinner could be Sam's spinner?

A. 

B. 

C. 

D. 
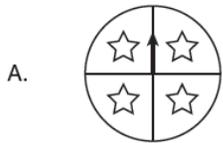
This item measures aspects of 7.SP.5
No Calculator
Key: D

Jasper wants to buy 2 hats and 3 T-shirts. Each hat costs $12.90 and each T-shirt costs $16.20. Which expression gives the most reasonable estimate for the total cost of the 2 hats and 3 T-shirts?

A.  $5 \times 28$
B.  $5 \times 29$
C.  $2 \times 13 + 3 \times 16$
D.  $2 \times 12 + 3 \times 16$

This item measures aspects of 7.EE.3
No Calculator
Key: C

A turtle starts off at 5 feet below sea level. The turtle walks until its elevation is 10 feet higher in elevation than where it started. Which number line represents the turtle's change in elevation?

A.



B.



C.



D.
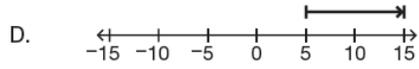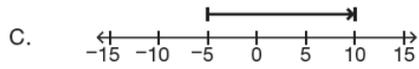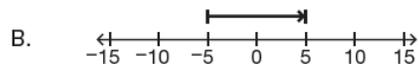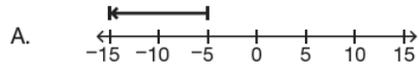


This item measures aspects of 7.NS.1b
No Calculator
Key: B

After $4\frac{1}{2}$ days of theater camp, one group of campers had written $15\frac{1}{2}$ pages of the script for a play. The group estimated the average number of pages it had written per day. Which statement correctly compares an estimate of the pages written per day and the exact number of pages written per day?

A. The estimate 15 ÷ 5 is the same as the exact number of pages written per day.
B. The estimate 15 ÷ 5 is larger than the exact number of pages written per day.
C. The estimate 16 ÷ 4 is smaller than the exact number of pages written per day.
D. The estimate 16 ÷ 4 is larger than the exact number of pages written per day.

This item measures aspects of 7.EE.3
No Calculator
Key: D

The concession stands at a ballpark sell nachos for $x$ dollars per order and french fries for $y$ dollars per order. The Palmer family bought 4 orders of nachos and 1 order of french fries. The Chen family bought 5 orders of nachos. The expression below represents the total cost of the nachos and french fries the two families bought.

$$(4x + y) + 5x$$

Which expression also represents the total cost of the nachos and french fries for both families?

A.   $4xy + 5x$
B.   $10xy$
C.   $9x + y$
D.   $20x + 5xy$

The table below shows how the temperature changed after 9:00 P.M.

| Time | Temperature (°F) |
|------|------------------|
| 9 P.M. | 74 |
| 10 P.M. | $72\frac{1}{2}$ |
| 11 P.M. | 71 |
| 12 A.M. | $69\frac{1}{2}$ |

Which correctly describes the change in temperature?

A.    The temperature increased $1\frac{1}{2}$°F each hour.

B.    The temperature increased $2\frac{1}{2}$°F each hour.

C.    The temperature decreased $2\frac{1}{2}$°F each hour.

D.    The temperature decreased $1\frac{1}{2}$°F each hour.

Don has 9 liters of juice. He pours equal amounts of the juice into 5 pitchers. There is 0.25 of a liter of juice left. How many liters of juice are in each pitcher?

A.   1.55 liters
B.   1.75 liters
C.   7.75 liters
D.   8.75 liters

This item measures aspects of 7.NS.B
No Calculator
Key: B

Hannah is buying a shirt in a state where the sales tax is 6.25%. The price of the shirt is $14.99. By which number should Hannah multiply $14.99 to determine the total sales tax?

A.  0.0625
B.  0.625
C.  6.25
D.  62.5

This item measures aspects of 7.EE.3
No Calculator
Key: A

Kia has a hot chocolate recipe that uses 3 ounces of chocolate and makes enough for 6 people. How much chocolate does Kia need to make hot chocolate for 36 people?

A.    4 ounces
B.    6 ounces
C.    18 ounces
D.    36 ounces

This item measures aspects of 7.RP.3
No Calculator
Key: C

Marvin is organizing fractions into two groups based on their decimal forms. The groups are shown below.

**Group 1**        **Group 2**

$\frac{1}{3}, \frac{5}{6}, \frac{4}{9}$        $\frac{1}{5}, \frac{3}{8}, \frac{6}{15}$

Marvin puts one more fraction into each group. Which pair of fractions is correctly organized into each of Marvin's groups?

A.    $\frac{5}{12}$ goes in Group 1 and $\frac{3}{12}$ goes in Group 2

B.    $\frac{3}{15}$ goes in Group 1 and $\frac{4}{15}$ goes in Group 2

C.    $\frac{5}{7}$ goes in Group 1 and $\frac{6}{7}$ goes in Group 2

D.    $\frac{13}{20}$ goes in Group 1 and $\frac{16}{20}$ goes in Group 2

This item measures aspects of 7.NS.2d
No Calculator
Key: A

Lindsay is hiking down a mountain. She starts at an elevation of 6,500 feet and descends another 1,000 feet before resting. Lindsay represents the elevation at which she is resting with the expression below.

$$6{,}500 - 1{,}000$$

Which expression also represents the elevation at which Lindsay is resting?

A.  $1{,}000 - 6{,}500$
B.  $1{,}000 - 5{,}500$
C.  $5{,}500 + (-1{,}000)$
D.  $6{,}500 + (-1{,}000)$

This item measures aspects of 7.NS.1c
No Calculator
Key: D

Every 3 weeks, Chris checks out 2 new books from the library. In how many weeks will Chris have checked out 36 books?

A.  24 weeks
B.  35 weeks
C.  37 weeks
D.  54 weeks

This item measures aspects of 7.RP.3
No Calculator
Key: D

Alexis reads that $\frac{2}{9}$ of the total number of trees in a state park are birch trees. She needs to convert the fraction to a decimal for a report about the state park. Which decimal is equal to the portion of the total number of trees in the state park that are birch?

A. 0.22

B. $0.\overline{2}$

C. 0.29

D. $0.\overline{29}$

This item measures aspects of 7.NS.2d
No Calculator
Key: B

Mai is buying 55 pounds of boiled crawfish for $3.15 per pound and 95 pounds of live crawfish for $1.85 per pound. Which expression would be the most reasonable estimate for the total cost of the crawfish Mai is buying?

A. $(50 \times 3) + (100 \times 1)$
B. $(50 \times 3) + (100 \times 2)$
C. $(3 + 1) \times 150$
D. $(3 + 2) \times 150$

This item measures aspects of 7.EE.3
No Calculator
Key: B

Della randomly selected 50 girls to survey from the 6th grade at her school. Which population is **best** described by any conclusions Della makes based on her survey?

A.    girls in Della's school
B.    students in Della's school
C.    girls in the 6th grade at Della's school
D.    students in the 6th grade at Della's school

This item measures aspects of 7.SP.1
No Calculator
Key: C

Kelsey compares the amount of money in her bank account on March 1st to the amount on March 8th. She finds the two amounts are the same. Which statement **most likely** explains Kelsey's bank account activity between March 1st and March 8th?

A.  She put money into her account the same number of times she took money out.

B.  She put the same amount of money into her account as she took out of her account.

C.  She put money into her account and took money out of her account only on one day.

D.  She put money into her account several times, but never took money out of her account.

This item measures aspects of 7.NS.1a
No Calculator
Key: B

**Use the rectangle below to answer question**



6 ft.
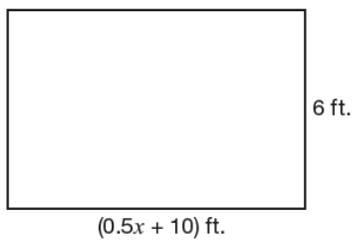
(0.5$x$ + 10) ft.

The area of the rectangle is $6(0.5x + 10)$ ft.$^2$. Which expression is also equivalent to the area of the rectangle?

A. $(3x + 60)$ ft.$^2$
B. $(6.5x + 16)$ ft.$^2$
C. $(16.5x)$ ft.$^2$
D. $(30x)$ ft.$^2$

Which question can be modeled by $15 \times \frac{1}{3}$?

A.   Alma has 15 pear trees. Each tree produced $\frac{1}{3}$ fewer pears than last year. How many
     pears did each tree produce this year?

B.   Lucy has 15 apple trees. Of those trees, $\frac{1}{3}$ of them produce green apples. How many
     trees produce green apples?

C.   Samira had 15 orange trees last year. She lost $\frac{1}{3}$ of her trees to fungus over the winter.
     How many orange trees from last year did **not** die from fungus?

D.   Thandi has 15 cherry trees. She fills baskets with cherries to give to her friends. Each
     basket contains $\frac{1}{3}$ of the cherries from a cherry tree. To how many friends can Thandi
     give a basket of cherries?

U-Move Rental Company charges $195 to rent a truck for 3 hours. Based on this rate, how much should the company charge to rent a truck for 5 hours?

A.  $39
B.  $65
C.  $325
D.  $975

This item measures aspects of 7.RP.3
No Calculator
Key: C

Izzy is buying a car that costs $12,764. She must pay $2,000 the day she buys the car and then $299 every month until the car is paid off. How many months will it take for Izzy to pay for the car?

A. 36
B. 43
C. 49
D. 50

This item measures aspects of 7.NS.3
No Calculator
Key: A

Dora ate $\frac{4}{5}$ of an apple. Grace ate $2\frac{1}{4}$ apples. Jamal ate 3 apples. Grace used the expression below to find the total number of apples they ate.

$$\frac{4}{5} + 2\frac{1}{4} + 3$$

Jamal used a different expression to find the total amount of apples they ate. Which expression could be the one Jamal used?

A.  $(2 \times 3) \times \left(\frac{4}{5} \times \frac{1}{4}\right)$

B.  $(2 \times 3) + \left(\frac{4}{5} \times \frac{1}{4}\right)$

C.  $(2 + 3) \times \left(\frac{4}{5} + \frac{1}{4}\right)$

D.  $(2 + 3) + \left(\frac{4}{5} + \frac{1}{4}\right)$

This item measures aspects of 7.EE.2
No Calculator
Key: D

Mitch and Laci paddled a boat up the Mississippi River at a speed of $1\frac{3}{5}$ miles per hour for $2\frac{1}{2}$ hours. How far, in miles, did Mitch and Laci paddle?

A.    1.6 miles

B.    $2\frac{3}{10}$ miles

C.    4.0 miles

D.    $7\frac{1}{5}$ miles

This item measures aspects of 7.NS.3
No Calculator
Key: C

The ratio of boys to girls on the debate team is 2 : 3. There are 32 boys on the debate team.
What is the total number of students on the debate team?

A.   16
B.   48
C.   64
D.   80

Lydia is buying 0.6 pound of dried fruit. The dried fruit is on sale for $3.80 per pound. How much does the dried fruit that Lydia is buying cost?

A. $1.88
B. $2.28
C. $6.33
D. $22.88

This item measures aspects of 7.NS.3
No Calculator
Key: B

Glen has 20 meters of rope. First, he cuts off 6 pieces that are each 1.5 meters long to give to his dad. Next, he cuts the remaining piece of rope in half. He gives each half to one of his two brothers. What is the length of the piece of rope he gave to one of his brothers?

A.   5.5 meters

B.   6.25 meters

C.   6.75 meters

D.   7.0 meters

This item measures aspects of 7.NS.3
No Calculator
Key: A

A store offers a rewards program that allows shoppers to collect points which can be used for various discounts. Shoppers earn 5 points for each item they purchase at the store, plus 100 bonus points for enrolling in the program. The expression below represents the number of points a rewards shopper earns after $x$ purchases.

$$5x + 100$$

Which is another way to represent the number of points a rewards shopper has after $x$ purchases?

A.  $5(x + 20)$
B.  $2x(3x + 50)$
C.  $(2x + 3x) \times 100$
D.  $105x$

The probability of randomly selecting an even number from a stack of number cards is $\frac{3}{4}$.
Which term **best** describes the probability of selecting an even number at random?

A.   certain
B.   impossible
C.   likely
D.   unlikely

This item measures aspects of 7.SP.5
No Calculator
Key: C

John ran $1\frac{1}{4}$ laps in 2 minutes. How many laps did John run on average per minute?

A.   $\frac{5}{8}$ lap

B.   $\frac{3}{4}$ lap

C.   $1\frac{3}{5}$ laps

D.   $2\frac{1}{2}$ laps

This item measures aspects of 7.RP.1
No Calculator
Key: A

The cafeteria staff has noticed that 11 students out of every 27 want orange juice instead of milk. The cafeteria staff made an estimation of the percentage of students who want orange juice. Which is the **best** estimate of and reason for the percentage of students who want orange juice?

A.   20% because $\frac{11}{27}$ is very close to $\frac{4}{20}$

B.   36% because $\frac{11}{27}$ is very close to $\frac{9}{25}$

C.   40% because $\frac{11}{27}$ is very close to $\frac{10}{25}$

D.   68% because $\frac{11}{27}$ is very close to $\frac{34}{50}$

Janie has been charting her growth for 3 months. She grew $\frac{1}{8}$ of an inch each of the 3 months. She is now exactly 60 inches tall. How tall, in inches, was Janie 3 months ago?

A.  $59\frac{3}{8}$ inches

B.  $59\frac{5}{8}$ inches

C.  60 inches

D.  $60\frac{3}{8}$ inches

This item measures aspects of 7.NS.3
No Calculator
Key: B

Farouk sailed his boat 2 miles east. He then sailed his boat back 2 miles west. Which number line **best** illustrates Farouk's position while sailing, where 0 is his starting point?

A.


B.


C.


D.
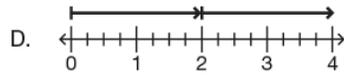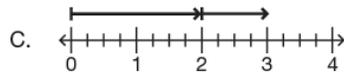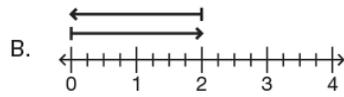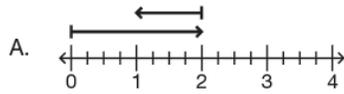
Hector wants to buy a shirt that was originally $26 but now has a new price that is $\frac{1}{2}$ of the original price. He also has to pay 9% sales tax on the new price. How much will Hector pay, including sales tax, for the shirt at its new price?

A.  $11.83
B.  $14.17
C.  $15.34
D.  $24.70

This item measures aspects of 7.RP.3
Calculator
Key: B

The deepest part of a lake near Luke's home is $72\frac{1}{4}$ feet. During a summer drought, the water level of the lake dropped $2\frac{5}{8}$ feet. What was the water level of the deepest part of the lake at the end of the drought?

A. $69\frac{5}{8}$ feet

B. $70\frac{3}{8}$ feet

C. $70\frac{7}{8}$ feet

D. $74\frac{7}{8}$ feet

This item measures aspects of 7.NS.3
Calculator
Key: A

The diameter of a circular basketball rim is 18 inches. What is the approximate circumference of a basketball rim?

A.   36 inches
B.   56.5 inches
C.   113 inches
D.   254.3 inches

This item measures aspects of 7.G.4
Calculator
Key: B

Carrie manages a hair salon. There is an equal chance her customers will be female or male. She flips a coin to simulate the probability of the gender of each of her next three customers. She uses heads (H) for female and tails (T) for male. This list shows the results of Carrie's simulation.

| THH | HHT | THT | TTT |
|-----|-----|-----|-----|
| HTT | HTT | HTT | HTH |
| HHH | THT | TTT | HTH |
| THT | TTH | HHT | HTH |

Using the data from the simulation, what is the probability that Carrie's next three customers will all be the same gender?

A. $\frac{1}{16}$

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

C. $\frac{3}{16}$

D. $\frac{3}{13}$

This item measures aspects of 7.SP.8
Calculator
Key: C

The weekly fee for a newspaper is $f$ dollars. By paying for 1 year's worth of newspapers at one time, a customer receives a discount as shown in the equation below.

$$52f - 13 = 221$$

How much is the weekly fee, $f$, for the newspaper?

A.  $4.00
B.  $4.25
C.  $4.38
D.  $4.50

This item measures aspects of 7.EE.4
Calculator
Key: D

Owen's family drove 50 miles per hour for $2\frac{1}{2}$ hours to get to his grandmother's house. How many total miles did Owen's family drive to get to his grandmother's house?

A.  20 miles

B.  $47\frac{1}{2}$ miles

C.  $52\frac{1}{2}$ miles

D.  125 miles

This item measures aspects of 7.RP.3
Calculator
Key: D

In a school fundraising contest, students received points toward prizes based on the number of magazine subscriptions they sold, as shown in the table below.

**Magazine Subscriptions**

| Number of Subscriptions Sold | Points Earned |
| --- | --- |
| 1 | 8 |
| 2 | 10 |
| 3 | 12 |
| 4 | 14 |
| 5 | 16 |

This item measures aspects of 7.RP.2
Calculator
Key: B

Which expression can be used to find the points earned for the number of subscriptions, $s$, sold?

A. $s + 7$

B. $2s + 6$

C. $3s + 4$

D. $4s$

Daisha and Malik are in a running club. Daisha ran $x$ kilometers two weeks in a row. Malik ran:

- 3 more kilometers than half of the number of kilometers Daisha ran the first week.
- 2 kilometers fewer than 4 times the number of kilometers Daisha ran the second week.

The expression below shows the total number of kilometers Malik ran during the two weeks.

$$\left(\tfrac{1}{2}x + 3\right) + (4x - 2)$$

Which other expression can be used to find the total number of kilometers Malik ran during the two weeks?

A.  $\tfrac{4}{2}x + 5$

B.  $3\tfrac{1}{2}x + 2$

C.  $\left(\tfrac{1}{2} + 3\right)x + (4 - 2)x$

D.  $\left(\tfrac{1}{2} + 4\right)x + (3 - 2)$

During a sale, Erica saved $1 for every $8 she would have spent in regular costs. The regular cost of the items that Erica bought during the sale was $104. Which proportion can be used to find $s$, the amount of money in dollars that Erica saved?

A. $\frac{1}{104} = \frac{s}{8}$

B. $\frac{8}{104} = \frac{s}{1}$

C. $\frac{s}{104} = \frac{8}{1}$

D. $\frac{s}{104} = \frac{1}{8}$

This item measures aspects of 7.RP.2c
Calculator
Key: D

**Use the figure below to answer question**
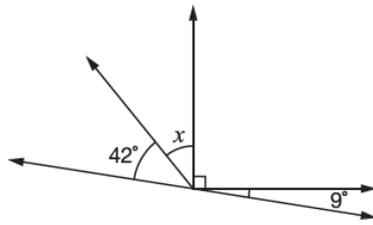


What is the value of $x$?

A.  39°
B.  48°
C.  51°
D.  81°

Charlene bought 4 boxes of pens. Each box contained $p$ pens. She gave away 8 pens and had at least 20 pens remaining. The number of pens each box contained can be found using the inequality below.

$$4p - 8 \geq 20$$

Which inequality represents all the possible numbers of pens each box could contain?

A. $p \leq 3$
B. $p \geq 3$
C. $p \leq 7$
D. $p \geq 7$

Taya is planting her crops. In 6 hours, she plants $\frac{3}{8}$ of a square mile of crops. At this rate, how many hours will it take Taya to plant 1 square mile of crops?

A.   $\frac{1}{16}$ of an hour

B.   $\frac{18}{8}$ hours

C.   16 hours

D.   18 hours

This item measures aspects of 7.RP.1
Calculator
Key: C

Andrew is designing a billboard that has an image of a baseball bat. His scale drawing of the billboard is shown below.

**Andrew's Billboard Design**



Scale: 2 cm = 5 ft.

|← ———————— 7.5 cm ———————— →|

What will be the length of the bat on the billboard, in feet?

A.   3.00 feet
B.   6.25 feet
C.   18.75 feet
D.   37.50 feet

This item measures aspects of 7.G.1
Calculator
Key: C

At a summer camp, 25% of the campers are 12 years old and $\frac{1}{3}$ of the campers are 13 years old. There are 60 campers in all. How many campers are 12 or 13 years old?

A.  15
B.  17
C.  20
D.  35

Oscar walked at the same rate for 10.5 miles. He completed his walk in 3 hours. What was Oscar's rate, in miles per hour, during his walk?

A.  3.5
B.  7.5
C.  10.5
D.  31.5

This item measures aspects of 7.RP.1
Calculator
Key: A

Jazzi rode her bike at a constant rate for 9 hours. The table below shows how many hours she biked and how many calories she burned.

**Jazzi's Bike Ride**

| Hours | Calories Burned |
|-------|-----------------|
| 2 | 460 |
| 5 | 1,150 |
| 6 | 1,380 |
| 8 | 1,840 |
| 9 | 2,070 |

How many calories did Jazzi burn per hour?

A.   230
B.   690
C.   1,150
D.   1,380

Mel spent $43.97 on three CDs. Two of the CDs were the same price, and the third CD cost $5.00 more than one of the other two CDs. The total cost can be represented by the equation $2c + (c + 5) = 43.97$, where $c$ is the cost of one lower-priced CD. What was the cost of the **higher-priced** CD?

A.   $11.28
B.   $12.99
C.   $14.66
D.   $17.99

A local park district just installed a circular pool that has a diameter of 24 feet. The cover fits exactly on the pool.



24 feet
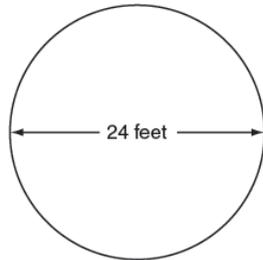
**Swimming Pool**

What is the area of the cover?

A.      75.36 square feet
B.     150.72 square feet
C.     452.16 square feet
D.   1,808.64 square feet

The shaded diagram shows the back of Karen's barn.
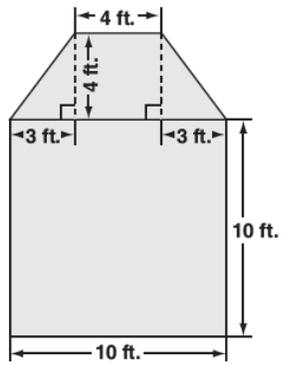
What is the area of the back of Karen's barn?

A.     72 sq. ft.
B.     100 sq. ft.
C.     128 sq. ft.
D.     140 sq. ft.

During a camping trip, two hikers were traveling toward each other along a straight path. They were 9 miles apart. One hiker walked at 2 miles per hour, and the other hiker jogged at 4 miles per hour. This can be represented by the equation $2x + 4x = 9$, where $x$ is time in hours. How long was it before they met?

A.   1.5 hours

B.   2 hours

C.   3 hours

D.   4.5 hours

Paula sat on her front porch and counted by color the cars that drove by. She recorded her results in the table below.

| Car Color | Number of Cars |
|-----------|----------------|
| black | 23 |
| blue | 14 |
| red | 12 |
| silver | 30 |
| white | 13 |

Based on Paula's data, what is the probability that the next car that drives by her house will be black?

A.  $\frac{1}{92}$

B.  $\frac{1}{23}$

C.  $\frac{1}{5}$

D.  $\frac{1}{4}$

Troy wants to buy a new tire for his bike. His old tire has a radius of 8 inches. What is the circumference of the bike tire?

A.  25.12 inches
B.  50.24 inches
C.  200.96 inches
D.  803.84 inches

This item measures aspects of 7.G.4
Calculator
Key: B

The members of the school band need at least $400 for a trip. They have received $50 in donations and are selling pecans for $5 a pound. The following inequality can be used to find the number of pounds of pecans, $x$, that will meet or exceed the band's goal of $400.

$$5x + 50 \geq 400$$

Which graph shows the number of pounds of pecans the band members need to sell to meet or exceed their goal?

A. 

B. 

C. 

D. 
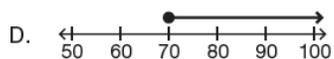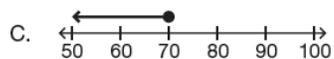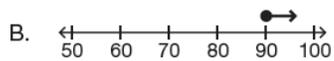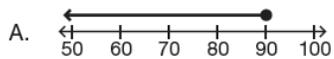
This item measures aspects of 7.EE.4b
Calculator
Key: D

Water comes out of Leigh's garden hose at a rate of 1 gallon per $\frac{1}{4}$ of a minute. What is the unit rate at which water flows out of Leigh's garden hose?

A.  $\frac{1}{4}$ of a gallon per 4 minutes

B.  $\frac{3}{4}$ of a gallon per minute

C.  4 gallons per minute

D.  9 gallons per 4 minutes

This item measures aspects of 7.RP.1
Calculator
Key: C

The tree diagram below shows the different entrées and side dishes Ben may choose for lunch.

**Entrée**          **Side Dish**

Roast Beef
- Beans
- Mashed Potatoes
- Corn

Fried Catfish
- Beans
- Mashed Potatoes
- Corn
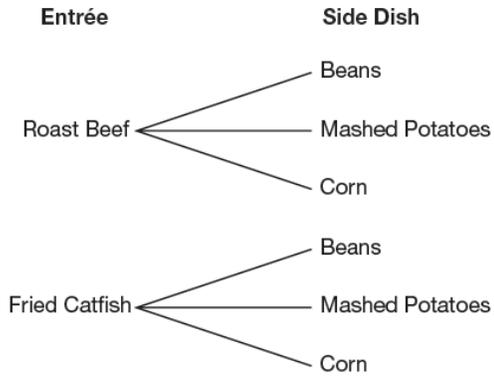
If Ben chooses one entrée and one side dish, what is the total number of different combinations he may choose?

A.   6
B.   8
C.   9
D.   12

An equation is shown below.

$$x + 2 = -5$$

What is the value of $x$?

A. −10
B. −7
C. −3
D. 7

Write your answers to questions 61 and 62 in the spaces provided. The questions have more than one part. Show all the work you do to find your answers. Even if you cannot answer all parts, answer as many as you can. You may still get points for answering part of a question. Be sure to write clearly.

**You MAY use a calculator for this session.**

**61.** A diagram of a farmer's irregularly shaped field is shown below. All angles shown in the diagram are right angles.
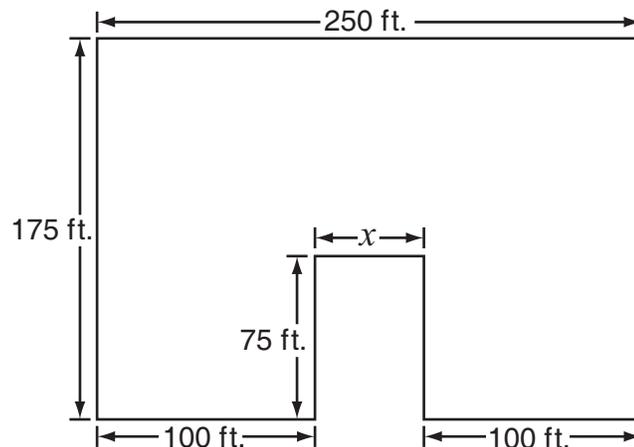


**A.** Find the missing length, $x$.


**B.** The farmer wants to build a fence around the perimeter of his field. What length of fence will he need? Show or explain how you found your answer.

**C.** The farmer wants to plant crops in his field. What is the area of the farmer's field? Show or explain how you found your answer.

**D.** The farmer also wants to build a circular duck pond in his field. The duck pond will have a radius of 15 ft. After the pond is built, what is the remaining area that the farmer can use to plant crops? Show or explain how you found your answer.

| | |
|---|---|
| **4** | The student earns 7 points. |
| **3** | The student earns 5 or 6 points. |
| **2** | The student earns 3 or 4 points. |
| **1** | The student earns 1 or 2 points. <br> **OR** <br> The student shows minimal understanding of determining the perimeter and area of composite figures |
| **0** | The student's response is incorrect or irrelevant to the skill or concept being measured. |
| **B** | No Response. |

## Correct Answers:

**Part A.**  The missing length is 50 feet.

**Part B.**  $175 + 250 + 175 + 100 + 100 + 50 + 75 + 75 = 1{,}000$ feet

**Part C.**  $250(175) - 75(50) = 40{,}000$ square feet

**Part D**.   $40{,}000 - 15^2(3.14) \approx 39{,}293.5$ square feet
   **OR**   $= 39{,}293.142$ Square feet using the $\pi$ key on a calculator

## Points Assigned:

**Part A**. 1 point
 1 point for the correct answer

**Part B.** 2 points
 2 points for the correct answer (or answer based on answer from part A) with the correct procedure
**OR**
 1 point for the correct answer (or answer based on answer from part A) with flawed procedure or no procedure
**OR**
 1 point for an incorrect answer (may be based on an incorrect answer from part A) due to calculation error with correct procedure

**Part C.** 2 points
 2 points for the correct answer (or answer based on answer from part A) with the correct procedure
**OR**
1 point for the correct answer (may be based on answer from part A) with a flawed procedure or no procedure
**OR**
1 point for correct procedure with calculation error resulting in an incorrect answer (may be based on an incorrect answer from part A)

**Part D.** 2 points
 2 points for the correct answer (or answer based on an answer from part C) with the correct procedure
**OR**
 1 point for the correct answer (may be based on answer from part C) with a flawed procedure or no procedure
**OR**
1 point for an incorrect answer (may be based on an answer from part C) due to a calculation error with correct explanation

**NOTE:  Do not penalize for incorrect labels unless paper would otherwise receive a score of 4.**

**62.** Jerome has to do one chore every night after dinner. He and his mother make a dartboard showing the names of various chores. Each night, Jerome throws a dart and does the chore shown in the section where the dart lands. If the dart misses the dartboard, Jerome has to throw the dart again.
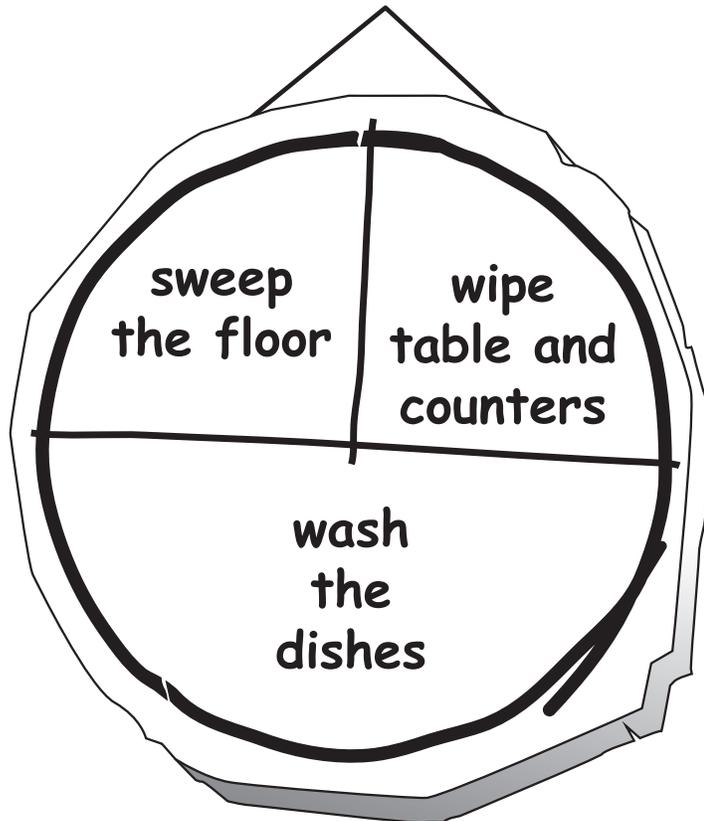


**A.** Suppose Jerome throws the dart at the dartboard randomly (without aiming). What is the **theoretical** probability that he will have to wipe the table and counters? Express your answer as a decimal.

**B.** Jerome uses a tally chart to keep track of which chore he does each night.

## Jerome's Chores

| sweep the floor | ᚋᚋ ᚋᚋ ᚋᚋ ᚋᚋ ᚋᚋ II |
|---|---|
| wipe table and counters | ᚋᚋ ᚋᚋ III |
| wash the dishes | ᚋᚋ ᚋᚋ ᚋᚋ ᚋᚋ |

Based on the data in the tally chart, what is the **experimental** probability that Jerome will wash the dishes? Show or explain how you found your answer.

**C.** Jerome's mother says to Jerome, "I think you are **not** throwing the dart randomly."

In one paragraph, explain whether you agree or disagree with Jerome's mother and justify your answer with numbers from Jerome's tally chart. Use the terms *theoretical probability* and *experimental probability* in your response.

Grade 7

| Scoring Rubric | |
|---|---|
| **4** | The student earns 5 points. |
| **3** | The student earns 4 points OR 3points with 1 point in each part. |
| **2** | The student earns 2 – 3 points. |
| **1** | The student earns 1 point OR demonstrates minimal understanding of the concept being measured. |
| **0** | The student's response is incorrect or irrelevant to the skill or concept being measured. |
| **B** | The student provides no response. |
| **Sample Answer:** | |

Part A. 0.25

Part B. $\frac{1}{3}$ ; The total number of nights is 27 + 13 + 20 = 60. The experimental probability that he has to wash dishes is $\frac{20}{60}$ (which is the same as $\frac{1}{3}$).

Part C. If Jerome were throwing the dart randomly, the *theoretical probability* that he would have to sweep the floor on a given night would be $\frac{1}{4}$ (since "sweep the floor" covers $\frac{1}{4}$ of the dartboard). On 60 nights he would have to sweep the floor about 15 times. However, the *experimental probability* that he has to sweep the floor is $\frac{27}{60}$, and is much greater than $\frac{1}{4}$. Therefore, I agree with his mother OR equivalent.

**Points Assigned:**

Part A. 1 point
1 point for calculating that the theoretical probability of wiping the table and counters is 0.25

Part B. 2 points
1 point for calculating that the experimental probability of washing the dishes is $\frac{1}{3}$ OR equivalent
**AND**
1 point for having a correct and complete explanation OR showing correct work

Part C. 2 points
1 point for identifying that the data suggest Jerome is not throwing the dart randomly and referencing a difference between the expected and observed data in either or both of the "sweep the floor" and "wash the dishes" tasks OR equivalent
**AND**
1 point for using the terms *theoretical probability* and *experimental probability* correctly in the explanation

**Note:** Scorers should follow along with the student's work throughout. If student makes an error in a previous part and subsequent answers are correct based on the earlier error, student should not be penalized again.