

 SCHOLASTIC

Must-Know Math™

25

Activities to Build Key Skills in 5th Grade



My name _____

The Birth of Basketball

More than 100 years ago, physical education teacher Dr. James Naismith invented the sport of basketball. Use the orange boxes to number the decimals in order from least (1) to greatest (8). Then follow the numbers to read the story of basketball's invention.

Hello there.

My name is Zero. Now that we've been introduced, I offer you this quick refresher about ordering decimals:

- * Starting on the left, compare the digits in the same place-value columns.
- * When you come to the first place where the digits are different, the number with the lowest digit is the lowest number.



It all started in the summer of 1891, when Naismith . . .

68.505

searching for what to use as goals. When he asked a custodian for two 18-inch square boxes, the custodian suggested using peach baskets instead. That sounded good, so Naismith was ready to . . .

68.005

decided the game should use a ball that was large and light. He . . .

68

was asked to come up with a new game for P.E. class—something that could be played indoors during the winter. He . . .

68.55

write up the rules for the game. They included: No holding, tripping, or pushing; to advance the ball, a player must pass or bat the ball to another player; after a basket is made, the ball is put back into play with a toss-up at center court; there will be two 15-minute halves to the game; there will be 9 players on each team. Naismith . . .

68.008

considered a sport similar to rugby (a type of football), but he believed that tackling would be too rough for an indoor game. So he made the rule that players would not be allowed to carry the ball. Footballs are made to carry, so Naismith . . .

.68.5

remembered a game from his childhood called Duck on a Rock, which was played with a ball and a goal. He decided that the goal for his new game should be horizontal, so that players would have to skillfully toss the ball in an arc to make a goal. He started . . .

68.58

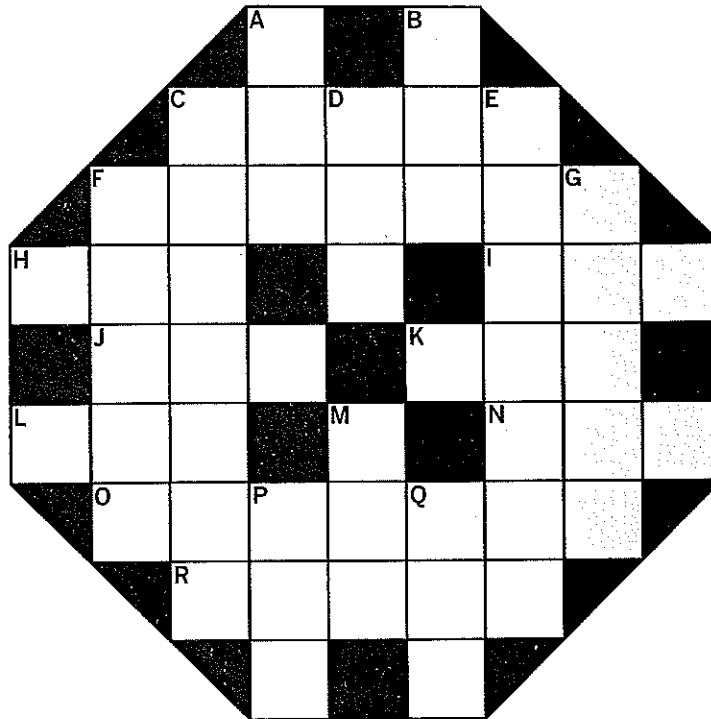
tried the game for the first time in December, 1891, when he introduced it to one of his classes.

68.05

chose a soccer ball over a football for his new sport. He then . . .

Across and Down

The clues to this crossword are addition and subtraction problems. Solve each problem and write the answer on the crossword grid. (You may leave out the commas.)



Across

- C.** $24,101 + 102$
F. $1,015,105 + 21,022$
H. $161 + 58$
I. $191 + 32$
J. $447 + 139$
K. $813 + 47$
L. $758 + 147$
N. $258 + 261$
O. $6,592,258 + 699,888$
R. $39,859 + 9,649$

Down

- A.** $369 - 126$
B. $857 - 156$
C. $2,151,745 - 53,221$
D. $356 - 93$
E. $4,250,863 - 1,024,315$
F. $26,232 - 14,725$
G. $80,109 - 8,093$
M. $801 - 76$
P. $1,046 - 49$
Q. $801 - 692$



Hello,
 Zero here again. I don't think I mentioned that in addition to giving math tips, I've also been known to crack a joke now and then—which reminds me: What do you call a song about a car? A cartoon! (Hey, I never promised they'd be good jokes!)

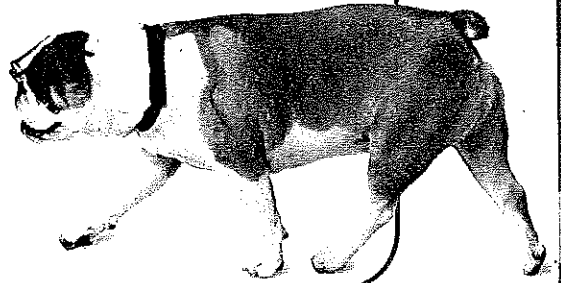
Funny Frogs

Estimate each product. Look for each of your answers in the grid, and scratch out the boxes in which it appears. (Most appear in more than one box.) When read left to right, top to bottom, the letters that remain will spell out the punch line of the joke below.

To estimate products, round each factor to its greatest place value. Then find the product mentally. For example, to estimate 364×24 :

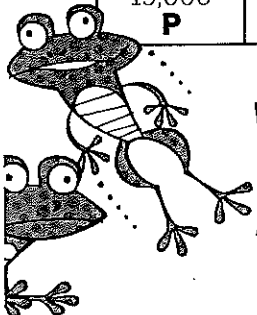
1. Round 364 to the nearest hundred, and round 24 to the nearest 10:
 400×20 .
2. Mentally, remove the 3 zeros and multiply:
 $4 \times 2 = 8$.
3. Add the 3 zeros back onto the answer:
 $8,000$.

This is the estimated product.



1. $63 \times 21 \approx$ _____
2. $78 \times 52 \approx$ _____
3. $48 \times 73 \approx$ _____
4. $47 \times 29 \approx$ _____
5. $35 \times 43 \approx$ _____
6. $287 \times 52 \approx$ _____
7. $846 \times 18 \approx$ _____
8. $659 \times 27 \approx$ _____
9. $529 \times 84 \approx$ _____

4,500 T	21,000 D	2,100 I	16,000 J	20,000 M	40,000 C	1,200 Z	35,000 E
21,000 D	2,100 I	1,200 Z	4,000 B	40,000 C	20,000 S	3,500 Q	1,500 X
4,000 B	1,600 K	2,400 F	1,500 X	10,000 U	15,000 P	40,000 C	24,000 N
18,000 W	28,000 H	21,000 D	15,000 P	35,000 E	16,000 J	24,000 N	1,500 X
21,000 D	15,000 P	5,000 Y	40,000 C	2,400 O	10,000 U	16,000 J	4,000 B
30,000 A	1,200 Z	40,000 C	17,000 R	16,000 J	1,600 K	35,000 E	21,000 D
1,600 K	28,000 H	30,000 A	2,000 V	2,100 I	40,000 C	24,000 N	1,000 G
15,000 P	2,400 F	1,600 K	9,000 L	2,100 I	21,000 D	35,000 E	20,000 S



What did the frog say to the other frog?

Answer: _____

Presidents' Pets

Find the quotient of the division problem next to each President's name. Then find the quotient in the box at the bottom of the page. The animal listed next to it was or is that President's pet while he was in the White House. Write each President's name next to his pet.

$$94 \overline{)12,032}$$

Abraham Lincoln

$$78 \overline{)9,672}$$

William Taft

$$53 \overline{)14,734}$$

Bill Clinton

$$71 \overline{)8,946}$$

Benjamin Harrison

$$79 \overline{)21,804}$$

Andrew Jackson

$$86 \overline{)23,478}$$

George W. Bush

$$49 \overline{)3,087}$$

Theodore Roosevelt

$$67 \overline{)18,693}$$

Woodrow Wilson

$$56 \overline{)3,752}$$

Barack Obama

Presidents' Pets



(279) Ike the ram: President _____



(128) Jack the turkey: President _____



(278) Socks the cat: President _____

(276) Poll the parrot: President _____



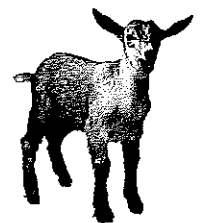
(67) Bo the dog: President _____

(273) Spot the dog: President _____

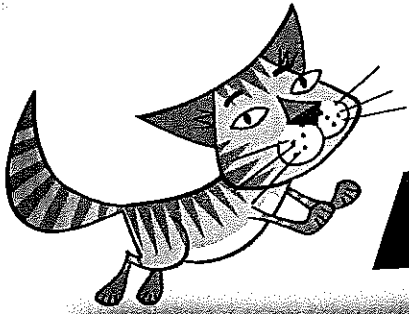


(124) Pauline the cow: President _____

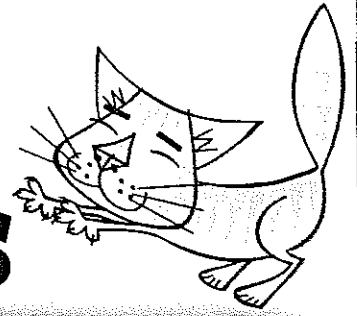
(63) Emily the snake: President _____



(126) Whiskers the goat: President _____



The Truth About Cats



Decide if the phrase next to each triangle accurately describes that triangle. If it does, write **TRUE** on the blank. If it does not, write **FALSE**. What you write will tell you whether the statement about cats is true or false.

Right triangle: one angle = 90°

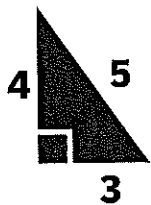
Obtuse triangle: one angle $> 90^\circ$

Acute triangle: all angles $< 90^\circ$

Equilateral triangle: all sides are equal

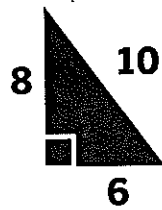
Isosceles triangle: two sides are equal

Scalene triangle: no sides are equal



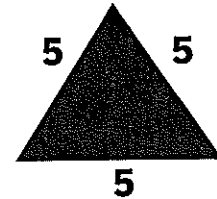
right equilateral _____:

Cats can see in total darkness.



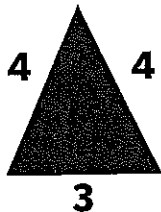
right scalene _____:

Cats can hear sounds that people can't hear.



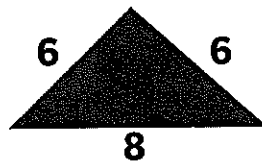
acute equilateral _____:

Cats don't like to be stared at.



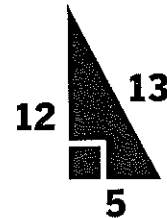
acute isosceles _____:

Cats have trouble climbing down trees.



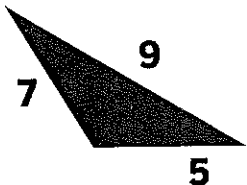
right isosceles _____:

Cats have nine lives.



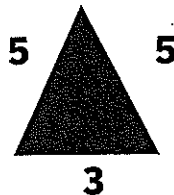
acute scalene _____:

Cats can predict earthquakes.



obtuse scalene _____:

Cats have dreams.



obtuse scalene _____:

Cats sleep only 15 minutes a day.



What has more lives than a cat? A frog—it croaks every night. (I know, I know, cats don't really have nine lives. It's just a joke, people.)



Answers Inside Answers

Identify each transformation as a reflection, translation, or rotation. Write the answer on the first line. Then, use letters from the answer to spell a word that fits the clue. You will not use all of the letters.



Reflection:
A figure that is flipped over a line to create a mirror image of the figure.

Translation:
A figure that is slid in any direction.

Rotation:
A figure that is rotated about a point.

1



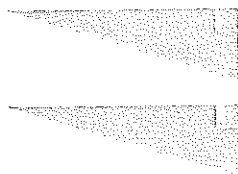
A weather condition: _____

4



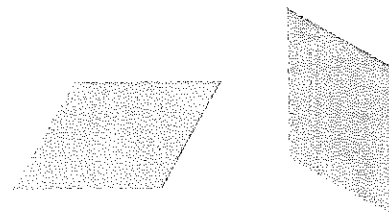
A young horse: _____

2



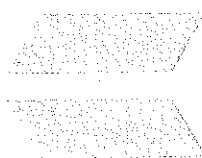
A pig might do this: _____

5



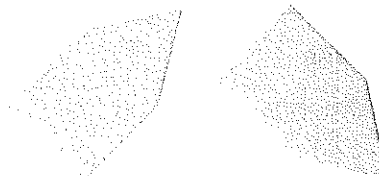
Part of a plant: _____

3



Something you write: _____

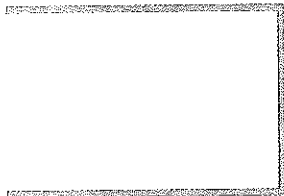
6



You use it with a boat: _____

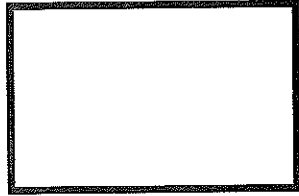
Your Very Own Rectangles

Use the information that is provided about each of the eight rectangles to fill in the information that is missing. (Note: The rectangles are not drawn to scale.) Then follow the directions at the bottom of the page to make the rectangles a bit more personal!



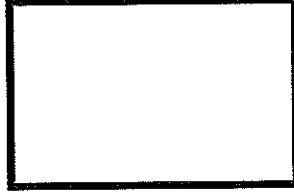
Rectangle A

Length: _____
Width: 4 inches
Perimeter: _____
Area: 24 sq inches



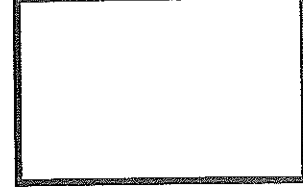
Rectangle B

Length: 10 inches
Width: _____
Perimeter: _____
Area: 80 sq inches



Rectangle C

Length: 12 inches
Width: _____
Perimeter: 34 inches
Area: _____



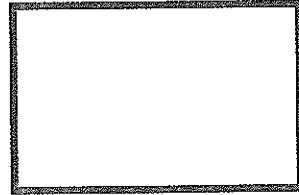
Rectangle D

Length: _____
Width: 3 inches
Perimeter: _____
Area: 36 sq inches



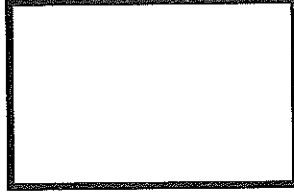
Rectangle E

Length: 9 inches
Width: 7 inches
Perimeter: _____
Area: _____



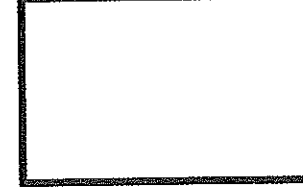
Rectangle F

Length: 11 inches
Width: _____
Perimeter: 26 inches
Area: _____



Rectangle G

Length: 18 inches
Width: _____
Perimeter: 38 inches
Area: _____



Rectangle H

Length: 5 inches
Width: _____
Perimeter: 18 inches
Area: _____

1. In the rectangle with the smallest perimeter, write your favorite TV show.

2. In the rectangle with the greatest perimeter, write your favorite singer.

3. In the rectangle with the greatest area, write your favorite game.

4. In the rectangle with the second-greatest area, write your favorite book.

Lunar Laughs

Simplify each fraction to lowest terms, and circle the letter next to the correct answer. Use your answers to solve the riddle at the bottom of the page. We did one for you.

1. $\frac{12}{18}$

2. $\frac{8}{32}$

3. $\frac{24}{36}$

4. $\frac{36}{99}$

5. $\frac{24}{40}$

6. $\frac{40}{72}$

7. $\frac{14}{63}$

8. $\frac{13}{26}$

9. $\frac{30}{105}$

10. $\frac{16}{144}$

11. $\frac{100}{121}$

12. $\frac{6}{102}$

13. $\frac{75}{1000}$



$\frac{3}{4}$ I

$\frac{1}{4}$ A

$\frac{8}{12}$ K

$\frac{4}{11}$ V

$\frac{3}{5}$ S

$\frac{5}{9}$ B

$\frac{14}{63}$ G

$\frac{1}{2}$ Y

$\frac{5}{21}$ P

$\frac{1}{8}$ M

$\frac{10}{11}$ C

$\frac{3}{51}$ L

$\frac{3}{40}$ H

$\frac{2}{3}$ **F**

$\frac{1}{3}$ J

$\frac{2}{3}$ O

$\frac{36}{99}$ Z

$\frac{3}{8}$ D

$\frac{5}{8}$ N

$\frac{2}{9}$ U

$\frac{13}{26}$ X

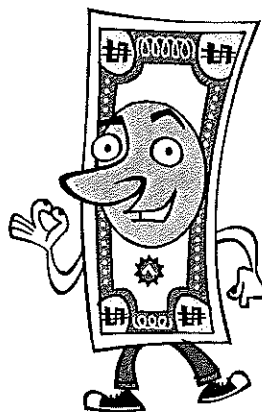
$\frac{2}{7}$ E

$\frac{1}{9}$ T

$\frac{100}{121}$ R

$\frac{1}{17}$ Q

$\frac{3}{400}$ W



How is the moon like a dollar?

$\frac{10}{10}$ $\frac{13}{13}$ $\frac{9}{9}$ $\frac{8}{8}$ $\frac{6}{6}$ $\frac{3}{3}$ $\frac{10}{10}$ $\frac{13}{13}$ $\frac{13}{13}$ $\frac{2}{2}$ $\frac{4}{4}$ $\frac{9}{9}$ $\frac{F}{1}$ $\frac{3}{3}$ $\frac{7}{7}$ $\frac{11}{11}$

$\frac{12}{12}$ $\frac{7}{7}$ $\frac{2}{2}$ $\frac{11}{11}$ $\frac{10}{10}$ $\frac{9}{9}$ $\frac{11}{11}$ $\frac{5}{5}$



Here's another one:
How does the man in the moon get his hair cut?
Eclipse it!

Care to Compare?



Write $<$, $>$, or $=$ to make each statement true.

To compare fractions, find equivalent fractions with common denominators. See the example, right.

$$\frac{3}{4} \quad ? \quad \frac{2}{3}$$



Find the least common multiple of 4 and 3, then find equivalent fractions with that denominator.

$$\frac{9}{12} > \frac{8}{12}, \text{ so } \frac{3}{4} > \frac{2}{3}$$

1. $\frac{5}{6} \quad \frac{3}{4}$

2. $\frac{1}{2} \quad \frac{4}{7}$

3. $\frac{3}{4} \quad \frac{17}{20}$

4. $\frac{9}{10} \quad \frac{2}{3}$

5. $\frac{3}{5} \quad \frac{2}{3}$

6. $\frac{7}{9} \quad \frac{2}{3}$

7. $\frac{7}{21} \quad \frac{1}{3}$

8. $\frac{3}{7} \quad \frac{4}{9}$

9. $\frac{7}{12} \quad \frac{5}{8}$

In this next set of problems, find the mystery fractions.

Example: I am a fraction $> \frac{3}{5}$ but $< \frac{4}{5}$. My numerator is 7.

Step 1: $\frac{3}{5} \quad \frac{7}{?} \quad \frac{4}{5}$

Write the fractions in order from least to greatest.

Step 2: $\frac{6}{10} \quad \frac{7}{?} \quad \frac{8}{10}$

Find equivalent fractions for $\frac{3}{5}$ and $\frac{4}{5}$, both with the same denominator. One must have a numerator less than 7 and one must have a numerator greater than 7, because you know that the mystery fraction comes between them.

Step 3: $\frac{6}{10} \quad \frac{7}{10} \quad \frac{8}{10}$

Fill in the denominator of the mystery fraction so that it is the same as the two known fractions.

0. I am a fraction $> \frac{3}{11}$ but $< \frac{4}{11}$.

My numerator is 7. _____

1. I am a fraction $< \frac{14}{5}$ but $> \frac{13}{5}$.

My denominator is 10. _____

Hint: Find a common denominator for all three fractions. After you fill in the mystery fraction's numerator, reduce it to a fraction with the denominator 10.

12. I am a fraction $> \frac{5}{7}$ but $< \frac{6}{7}$.

My denominator is 4. _____

Hint: When you choose the numerator for the mystery fraction, pick a number that will make a fraction that can be reduced to a fraction with the denominator 4.

Connect the Dots

Using a straightedge, draw lines connecting each fraction to its decimal equivalent. When a line passes through two dots (not all lines will), write the letter that's in one dot on the blank above the number that's in the other dot to complete Zero's joke. We did one for you.

$\frac{1}{10}$	•				• .3
$\frac{7}{100}$	•	1		C	• .007
$\frac{3}{100}$	•	2	A		• .01
$\frac{7}{10}$	•	3			• .1
$\frac{3}{1000}$	•	4	E		• .03
$\frac{1}{1000}$	•		S		• .07
$\frac{7}{1000}$	•	5	I	K	• .09
$\frac{3}{10}$	•	6	U		• .003
$\frac{9}{100}$	•	7		W	• .9
$\frac{9}{10}$	•	8			• .001
$\frac{9}{1000}$	•		9		• .7
$\frac{1}{100}$	•			Q	• .009



What kind of jokes do ducks tell?

_____ A _____
 8 4 2 3 9 7 1 6 5 2

Maction Squares

What's a maction square? It's a magic square with fractions, of course. In a maction square (or a magic square), the sum of the numbers in each row, column, and diagonal is the same. Complete each maction square below so that the numbers add up to the "maction number" provided. Write each fraction in simplest form.

Maction Number: 6

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

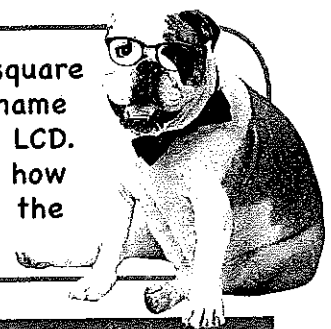
Maction Number: 5

		2
	$1\frac{2}{3}$	
$1\frac{1}{3}$		$\frac{2}{3}$

Maction Number: $1\frac{1}{4}$

	$\frac{5}{12}$	$\frac{1}{4}$
		$\frac{1}{3}$

To solve the maction square on the bottom left, rename the fractions using the LCD. This purple box shows how to find the number in the top right corner.

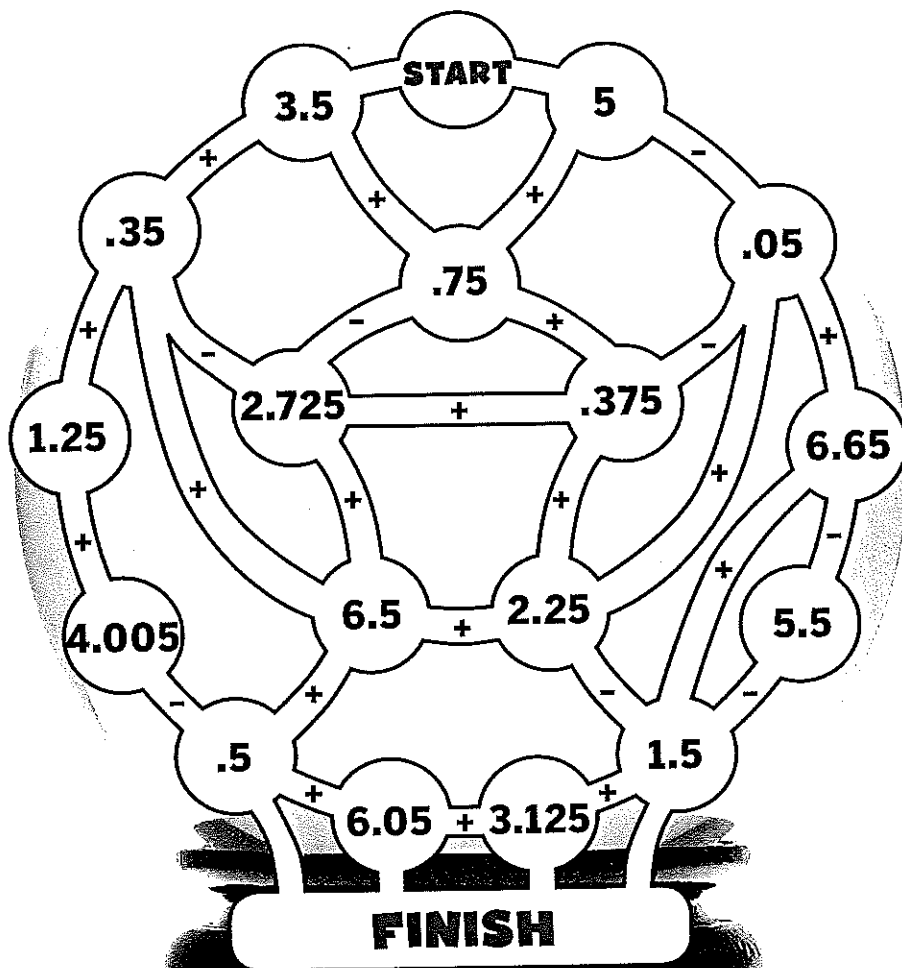


(the total you need) - (the sum of the two numbers you know)

$$\begin{array}{rcl}
 1\frac{1}{4} & - & (\frac{1}{4} + \frac{1}{3}) = \\
 \frac{5}{4} & - & (\frac{1}{4} + \frac{1}{3}) = \\
 \frac{15}{12} & - & (\frac{3}{12} + \frac{4}{12}) = \\
 \frac{15}{12} & - & \frac{7}{12} = \frac{8}{12} \\
 & & = \frac{2}{3}
 \end{array}$$

Find Your Fortune

Trace any path through the crystal ball. You may pass through each number only once. Add and subtract the decimals according to the signs. The number you end up with will tell you which of the fortunes at the bottom of the page is yours.



Final number < 10

You, friend, are going to be famous! Name a magazine; your face will be on the cover. Name a talk show; you're going to be a guest. Strangers will interrupt your dinner, and it will be hard to escape the flash of cameras. Actually, you might want to start thinking about a disguise.

Final number = 10

One day, a strange, shiny object is going to appear in the sky. To your utter amazement, it will land right in front of you. A hatch will open and a creature unlike anything you've ever seen will slide out. It will offer you a snack if you come aboard. And who can resist a snack?

Final number > 10

Of course nobody really wants to turn into a pumpkin, but seriously, it's not that bad. It's much cooler than turning into a potato, and you might end up as a porch decoration, a jack-o'-lantern, or a delicious pumpkin pie! (And you know you like whipped cream.)

Happy Tails Pet Supply

Estimate the cost of each purchase at Happy Tails Pet Supply.

To estimate the product when you multiply an amount of money by a whole number, round the money to the nearest whole dollar and then multiply. For example:

Estimate $\$8.79 \times 3$

$\$8.79$ rounded to the nearest whole number is $\$9$, and $\$9 \times 3 = \27 , so

$\$8.79 \times 3$ is about $\$27$.

1. 4 nail clippers

Estimated cost: _____

2. 7 boxes of biscuits

Estimated cost: _____

3. 4 toothbrushes

Estimated cost: _____

4. 2 bags of food

Estimated cost: _____

5. 5 bottles of shampoo

Estimated cost: _____

6. 2 beds

Estimated cost: _____

7. 3 collars and 5 combs

Estimated cost: _____

8. 5 toys, 1 bed, and 3 bags of food

Estimated cost: _____

Bag of dog food: $\$24.97$

Dog bed: $\$33.75$

Box of dog biscuits: $\$6.19$

Dog toothbrush: $\$9.29$

Dog collar: $\$14.79$

Dog comb: $\$6.27$

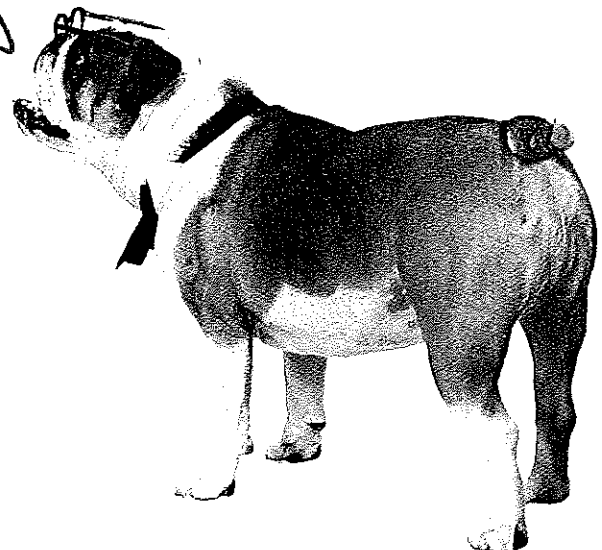
Dog nail clipper: $\$1.99$

Bottle of dog shampoo: $\$8.09$

Dog toy: $\$6.15$

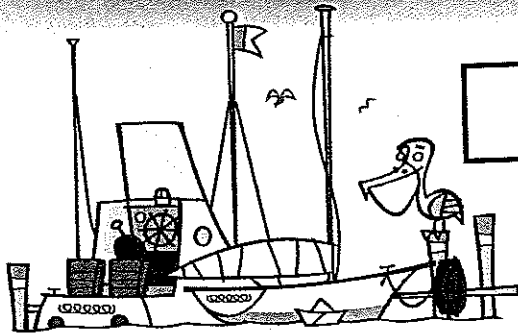


My tail is short, it's true. But I can wag with the best of them—just give me a treat and I'll prove it!



Island Hop

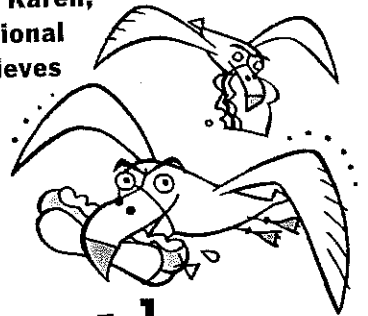
Welcome to the Animal Islands. Imagine that you're sailing in crystal clear waters as warm breezes ruffle your hair. While you're imagining that, imagine doing some math too. Here's what to do: Write any fraction or mixed number in the box by the marina. Then follow the arrows, multiplying as you go. You should notice something about the numbers that appear on the three islands you visit.



Marina

$$\square \times \frac{5}{6}$$

Ferris and Karen,
international
food thieves



$$\square \times 4\frac{1}{2}$$



Larry the shark

$$\square \times \frac{4}{15}$$

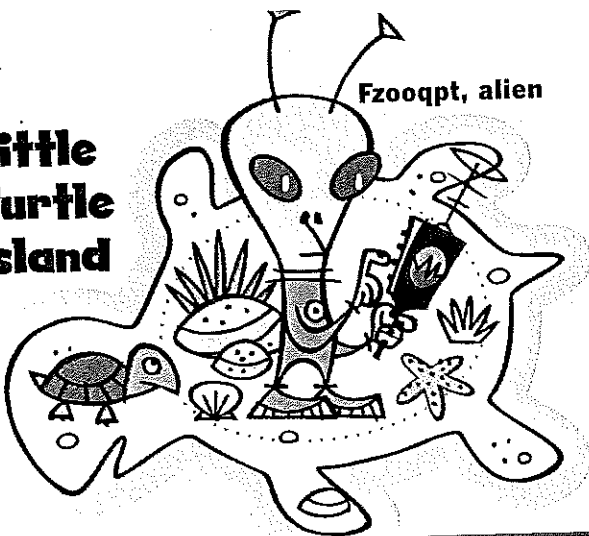
Tom Ferguson,
5th grade teacher

Cat Island



$$\square \times 1\frac{3}{4}$$

Little
Turtle
Island



Fzooqpt, alien

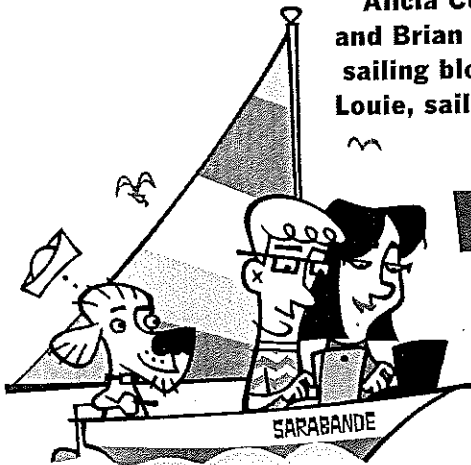
To multiply fractions, you simply multiply the numerators and multiply the denominators. Then, if necessary, simplify the product. To multiply mixed numbers, rename them as improper fractions before you begin multiplying.

For example:

$$\begin{aligned} 1\frac{2}{3} \times \frac{3}{4} &= \\ \frac{5}{3} \times \frac{3}{4} &= \frac{15}{12} \\ &= 1\frac{3}{12} \\ &= 1\frac{1}{4} \end{aligned}$$



Alicia Collins
and Brian Nisbet,
sailing bloggers;
Louie, sailing dog



Sheila
Vail, brain
surgeon



Elephant Island

$\times 4\frac{2}{3}$

$\times 6\frac{2}{5}$

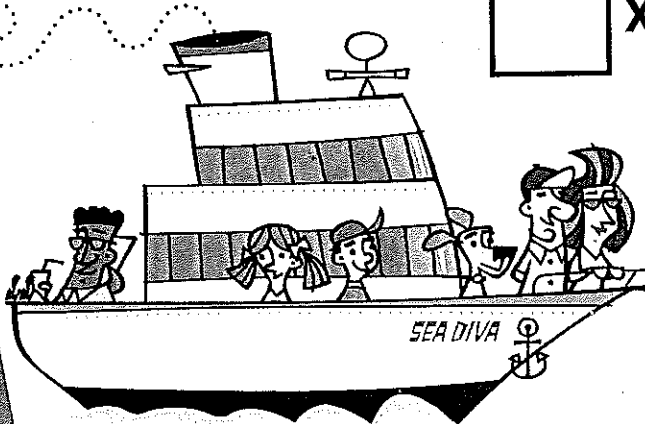
$\times 1\frac{7}{8}$



Cap'n Bill, crusty
old fisherman; Scamp,
crusty old dog

$\times \frac{6}{49}$

$\times \frac{1}{12}$



The Sea Diva, one of
Royal Celebrity's most
popular cruise ships



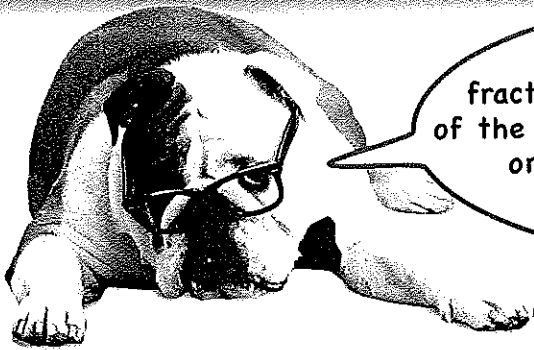
Lisa
Monroe,
librarian

Rabbit Island



Fantastic Fun Facts

Each fun fact below is missing the number that completes it. To find it, solve the division problem and find the quotient in the Figure Bank. The number that appears next to the quotient goes in the blank.



Remember, to divide fractions, multiply by the reciprocal of the divisor. Write any mixed numbers or whole numbers as improper fractions before you begin.

1. $\frac{3}{4} \div \frac{1}{2} =$ _____

The average American watches about _____ hours of TV every month at home.

2. $\frac{5}{6} \div \frac{2}{3} =$ _____

Oak trees do not produce acorns until they are at least _____ years old.

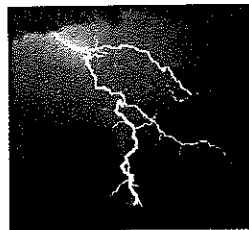


3. $\frac{1}{2} \div \frac{1}{4} =$ _____

There are approximately _____ bricks in the Empire State Building.

4. $4 \div \frac{1}{8} =$ _____

An average of _____ people are killed by lightning in the U.S. each year.



5. $\frac{1}{8} \div 4 =$ _____

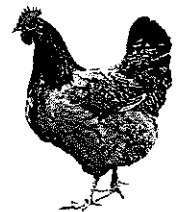
A blue whale gains approximately _____ pounds a day for the first year of its life.

6. $\frac{9}{10} \div \frac{3}{8} =$ _____

There are _____ ways to make change for a dollar, if you include the \$1 coin.

7. $7\frac{1}{2} \div 2\frac{1}{2} =$ _____

The longest recorded flight of a chicken is _____ seconds.



8. $1\frac{3}{4} \div 6 =$ _____

There are approximately _____ owned dogs in the U.S.

Figure Bank

(The quotients are purple; the figures that go in the blanks are green.)

$\frac{1}{32}$: 200

$2\frac{2}{5}$: 293

$1\frac{1}{4}$: 20

$1\frac{1}{2}$: 153

$\frac{7}{24}$: 74,800,000

3: 13

2: 10,000,000

32: 44

The New York Who?

Some of today's professional sports teams started out with different names. To learn a team's original name, find the measurement in the "Old Names" box that is equivalent to the measurement listed above the team's current name. Write the equivalent measurement and the old name in the spaces provided.

6 quarts = _____

New York Yankees

Old name: _____



96 fluid ounces = _____

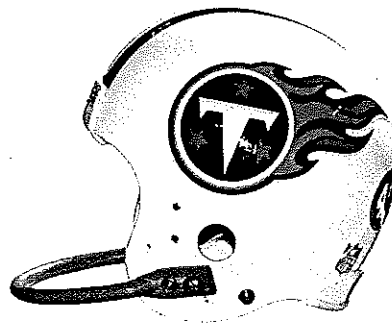
New York Jets

Old name: _____

32 fluid ounces = _____

Tennessee Titans

Old name: _____



4 gallons = _____

Sacramento Kings

Old name: _____



16 cups = _____

Baltimore Orioles

Old name: _____

24 pints = _____

Boston Red Sox

Old name: _____

2 gallons = _____

Pittsburgh Steelers

Old name: _____

20 cups = _____

Los Angeles Clippers

Old name: _____

20 quarts = _____

Milwaukee Brewers

Old name: _____

14 pints = _____

Oklahoma City Thunder

Old name: _____

Old Names

4 cups — Oilers
 5 gallons — Pilots
 3 quarts — Titans
 256 fluid ounces — Pirates
 12 pints — Highlanders

3 gallons — Americans
 5 quarts — Braves
 64 cups — Royals
 1 gallon — Browns
 7 quarts — Supersonics

All Aboard

Zero and some of his friends are traveling by train to a math conference in Numberopolis. (You may not have realized that there are a number of animals with math skills out there, but there are.) Below is the train schedule for the day of the conference. Use it to answer questions about the trains and the animals' trips.



Morning Schedule (All times a.m. unless otherwise noted.)

Trains	1	2	3	4	5	6
Departing from:						
Circle Town		7:45	8:35		9:45	
Fractionville	8:00	8:15	9:00	9:45	10:10	10:25
Percent City		8:30	9:15		10:25	
Decimalopolis	8:20	8:40	9:25	10:10	10:35	10:45
Polygon Town	8:30	8:50	9:35	10:25	10:45	11:00
Integerville	9:10	9:30	10:15	11:00	11:25	11:40
Digit City		10:00		11:30	11:55	
Numberopolis	9:45	10:10	10:50	11:40	12:05 p.m.	12:15 p.m.

1. How long is the trip from Circle Town to Numberopolis on each of the following trains?

- a. Train #2: _____
- b. Train #3: _____
- c. Train #5: _____

2. How long is the trip from Fractionville to Numberopolis on each of the following trains?

- a. Train #1: _____
- b. Train #2: _____
- c. Train #3: _____
- d. Train #4: _____
- e. Train #5: _____
- f. Train #6: _____

3. Zero wants to arrive in Numberopolis by 10:30 a.m. If he catches the train in Circle Town, which train or trains can he take?

4. If Zero decides to walk to Fractionville and catch the train there, by what time must he arrive to be on the first train that arrives in Numberopolis that morning? What train would that be, and at what time would it arrive in Numberopolis?
(Fill in the blanks.)

Zero must arrive in Fractionville by _____. He would be taking train # _____, which arrives in Numberopolis at _____.

5. If Zero catches the 7:45 train in Circle Town and Sum (she's a cat) catches the 8:30 train in Polygon Town, who will arrive in Numberopolis first? _____

6. Zero's sister Nil (also a bulldog) plans to board the train in Integerville. If she misses the 10:15 to Numberopolis, how long will she have to wait for the next train to arrive? _____

7. Infinity (he's a parrot) is going to board the train in Decimalopolis. If he misses the 10:10 to Numberopolis, how long will he have to wait for the next train to arrive? _____

8. Quotient (a guinea pig) has a ticket for train #3, leaving from Polygon Town. Zero is thinking of taking train #2 from Circle Town and getting off in Polygon Town to meet up with Quotient.

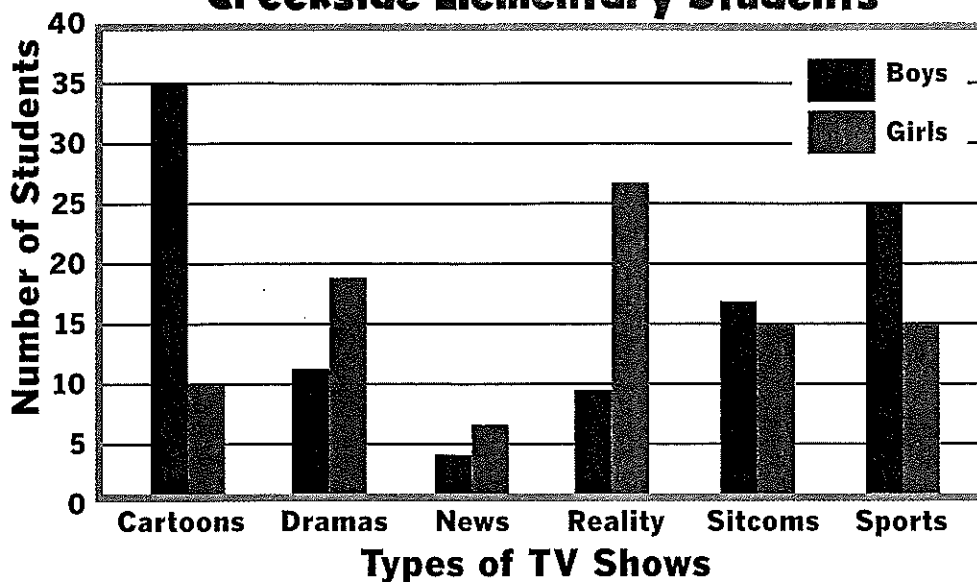
- a. If Zero does this, how long will he have to wait before boarding train #3 with Quotient? _____
- b. If Zero and Quotient take the #3 train to Numberopolis, what time will they arrive? _____
- c. How much earlier will Zero arrive in Numberopolis if he stays on train #2 the whole way? _____



What They're Watching

Use the graph below to answer questions about the TV habits of boys and girls at Creekside Elementary School.

Favorite Types of TV Shows of Creekside Elementary Students



1. Which type of TV show do the boys like . . .
 a. most? _____
 b. least? _____

2. Which type of TV show do the girls like . . .
 a. most? _____
 b. least? _____

3. About how many girls say they like sports shows best? _____

4. About how many times as many girls say they like reality shows best than say they like the news best? _____

5. For which type of show was there the least difference between the number of boys and the number of girls? _____

6. About how many boys say they like sitcoms best?

7. For which type of show was there the greatest difference between boys and girls?

8. Which type of show was selected by the highest combined total of boys and girls? _____

9. About how many more girls than boys say they like reality shows the best?

10. About how many times as many boys selected cartoons as their favorite than selected sitcoms? _____

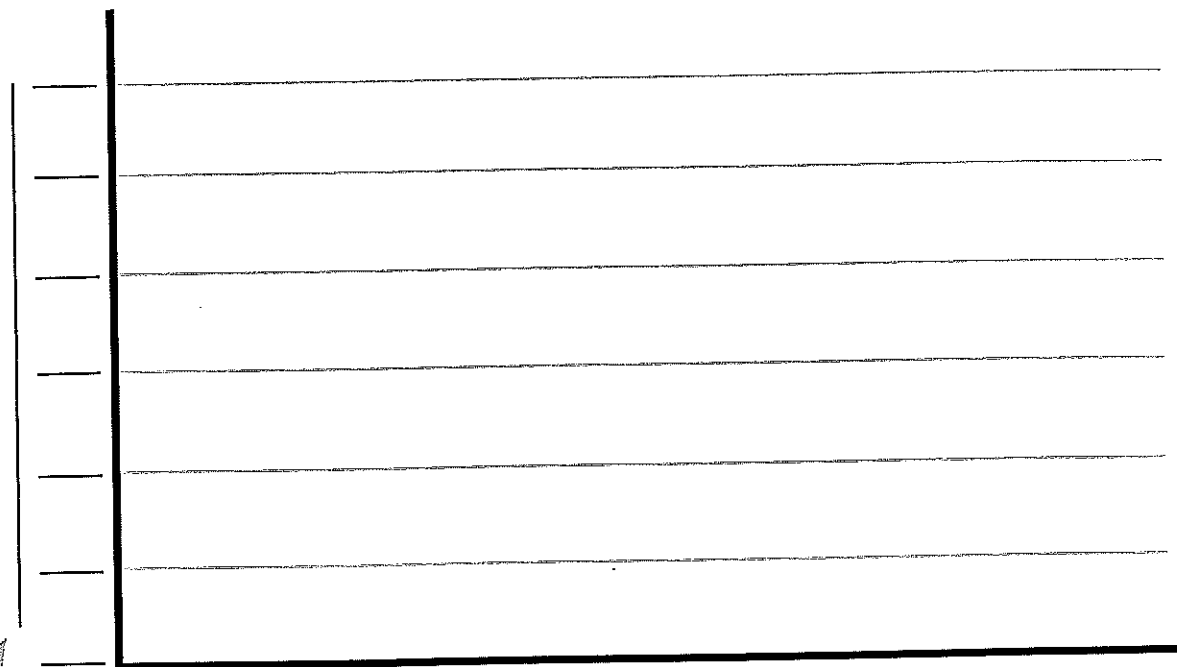
Now use the data set below to create a double-bar graph comparing the fifth-graders' and the sixth-graders' favorite type of movie. Be sure to label the graph as directed.

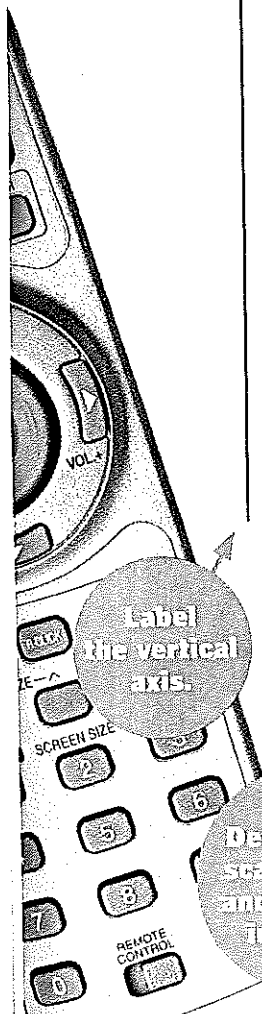
Favorite Types of Movie		
Type	5 th Grade	6 th Grade
Drama	19	16
Comedy	26	22
Animation	7	5
Action	17	17
Science Fiction	8	10

Color in the Key.

5th Grade
 6th Grade

Give the graph a title.





Label the vertical axis.

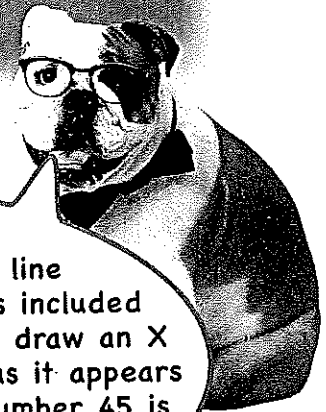
Decide what scale to use, and label the intervals.

Label the horizontal axis.

List the movie types in the ovals.

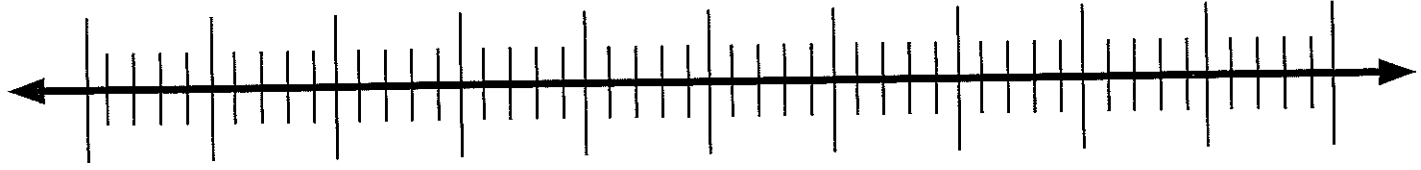
Speedy Species

The data below show the top land speeds of various animals. Use the data to make a line plot. Then find the mean, median, mode, and range of the data to learn the animals' speeds.

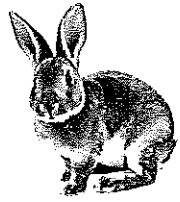


Maximum land speeds (in mph) of various animals
 60, 50, 25, 35, 70, 30, 50, 40, 30, 42, 30, 43, 30, 35, 30

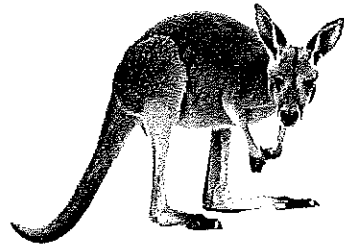
First, fill in the numbers on the number line below. Make sure all the numbers included in your data will be covered! Next, draw an X above each number as many times as it appears in your data. For example, if the number 45 is listed three times in your data, you should draw 3 X's over the number 45.



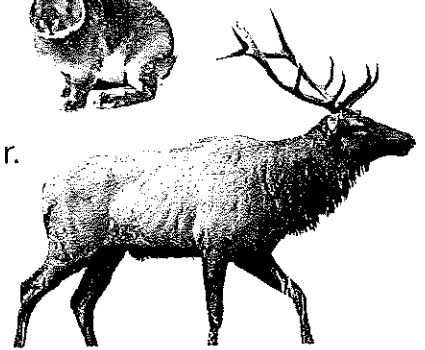
A hyena runs _____ miles per hour.
mean



A rabbit runs _____ miles per hour.
median



A kangaroo runs _____ miles per hour.
mode

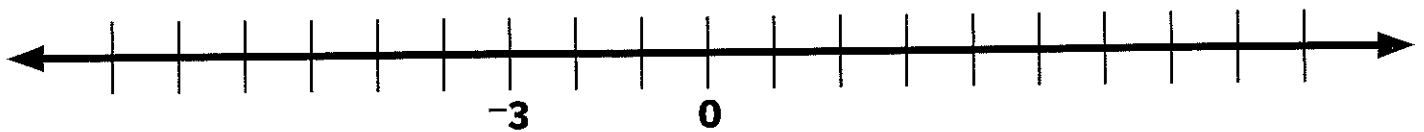


An elk runs _____ miles per hour.
range

- mean:** the sum of all the numbers divided by the number of addends
- median:** the middle number when the data are arranged in order
- mode:** the number that occurs the most often
- range:** the difference between the greatest and least values

Name That City

First, write the missing integers on the number line. Then, read each fact about a U.S. city and circle the integer next to the city it describes. Don't worry, you don't have to be an expert on cities—just follow the orange directions in parentheses.



1. This city had the first traffic light, in 1914.

(Circle the integer that is > 0 .)

- 2 Wichita, Kansas
- 2 Cleveland, Ohio

2. This city has the highest average temperature in the United States.

(Circle the integer that is < -2 .)

- 0 Key West, Florida
- 3 El Paso, Texas

3. The first concrete street in America was built in this city, in 1891.

(Circle the integer that is > 7 .)

- 7 Reedsburg, Wisconsin
- 8 Bellefontaine, Ohio

4. This easternmost U.S. city receives the first rays of morning sunshine in the U.S.

(Circle the integer that is > -5 .)

- 6 New Bedford, Rhode Island
- 9 Eastport, Maine

5. The first McDonald's restaurant opened in this city in 1940.

(Circle the integer that is > -8 .)

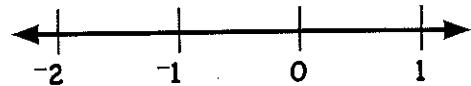
- 7 San Bernardino, California
- 9 Bloomington, Indiana

6. This city has a pedestrian skyway system that is longer than seven miles. People can travel all over downtown without ever going outside.

(Circle the integer that is < -1 .)

- 0 Atlanta, Georgia
- 2 Minneapolis, Minnesota

Remember, the integers to the left of 0 on a number line are negative and the integers to the right of 0 are positive. For example:



7. This city is home to the first U.S. zoo.

(Circle the integer that is least.)

- 0 New York, New York
- 5 San Diego, California
- 8 Philadelphia, Pennsylvania

8. Each October, this city hosts the world's largest hot-air-balloon festival.

(Circle the integer that is greatest.)

- 10 Seattle, Washington
- 0 Albuquerque, New Mexico
- 5 Twin Falls, Idaho

A Thought for Your Pennies

Below are some facts about pennies—with missing information. Above each penny fact is a statement that describes an algebraic expression. Find that expression in the answer box at the bottom of the page and write the information next to it in the blank.

1. the sum of six and n

The average penny lasts _____ years.

2. five times n

Pennies were the _____ coins minted in America.

3. the product of eight and n

The first one-cent coins were _____ than the pennies of today.

4. five decreased by n

The Lincoln penny is the only U.S. coin with its portrait facing to the _____.

5. six less than n

In 2009, _____ new designs of the Lincoln penny were minted.

6. the quotient of n and eight

About 30 _____ pennies are made each day.

7. eight more than n

More than _____ of all coins made in the U.S. are pennies.

8. n increased by five

The penny is the _____ widely used coin in circulation today.

9. the sum of six times n and five

There are about 150 _____ pennies in circulation.

10. five less than the product of six and n

Since 1983, the penny has been made up of 97.5% _____ and 2.5% copper.

Answers

$n + 5$: most

$5 - n$: right

$6n$: twenty

$8 - n$: one half

$6n + 5$: billion

$n - 5$: left

$6 - n$: five

$n - 6$: four

$n \div 8$: million

$6n - 5$: zinc

$5n$: first

$n \div 6$: ten

$8n$: larger

$5n - 6$: thousand

$6 + 5n$: trillion

$n \div 5$: last

$n + 6$: twenty-five

$n + 8$: two thirds

$5 - 6n$: silver

$6 - 5n$: gold



A Little Dog Humor

For each problem, solve for b . Circle the word next to the correct answer. At the bottom of the page, write the circled word on the line above the number of the problem it came from. You'll end up with the answer to another fabulous joke!

1. $b + 5 = 11$

2. $b - 7 = 15$

3. $5b = 45$

4. $b \div 4 = 8$

5. $28 \div b = 4$

6. $15 - b = 6$

7. $8b = 56$

16 near

22 the

9 Because

2 part

7 mess

9 house

6 most

6 up

8 a

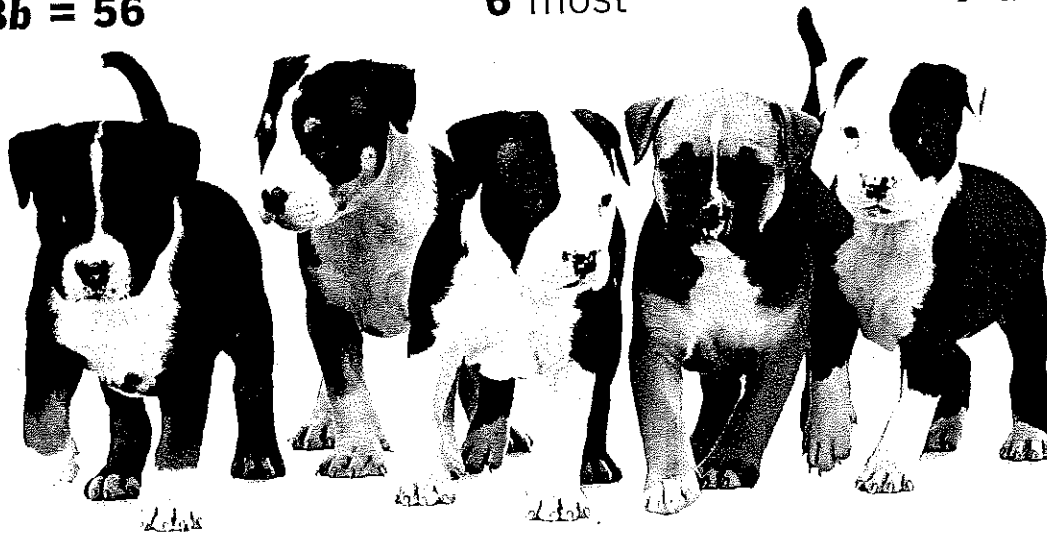
8 Since

32 whole

6 dirt

21 bunch

7 they



Why is a group of puppies called a litter?

3

7

5

1

2

4

6

Know Your Parks

Next to each statement about a U.S. National Park are two ratios. If the ratios are equivalent, circle YES. If the ratios are not equivalent, circle NO. The name of the state next to the word you circled is the state in which that park is located.

1. Acadia National Park is home to pine trees and the highest mountain along the East Coast of the United States.

2:3 and $\frac{7}{9}$ YES Massachusetts
NO Maine

2. Arches National Park is home to natural sandstone arches and other extraordinary rock formations.

$\frac{4}{6}$ and 6 to 9 YES Utah
NO Missouri

3. Denali National Park is home to large glaciers and North America's highest mountain.

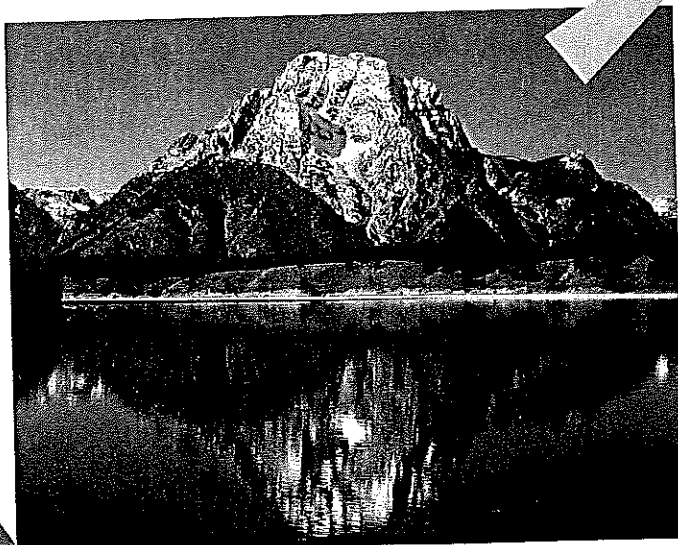
$\frac{1}{5}$ and $\frac{8}{35}$ YES Minnesota
NO Alaska

4. Glacier National Park is home to rugged mountains and beautiful lakes.

4:8 and 5:10 YES Montana
NO North Dakota

5. Grand Canyon National Park is home to steep canyons, raised plateaus, and desert basins.

$\frac{18}{24}$ and 3 to 4 YES Arizona
NO Oklahoma



Remember, a ratio can be written three ways: word form, ratio form, or fraction form. For example:

$$3 \text{ to } 8 = 3:8 = \frac{3}{8}$$

(word form) (ratio form) (fraction form)

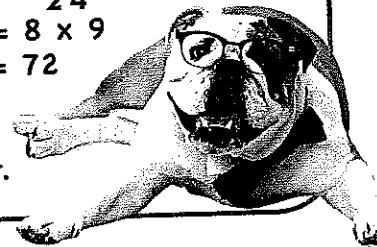
One way to determine if two ratios are equal is to see whether their cross-products are equal. If they are, the ratios are equivalent.

For example, take 3:8 and 9 to 24. First, put the ratios in fraction form:

$$\begin{array}{ccc} \frac{3}{8} & & \frac{9}{24} \\ & \swarrow \quad \searrow & \\ & 3 \times 24 = 8 \times 9 & \\ & 72 = 72 & \end{array}$$

Now, cross-multiply:

The cross-products are equal, so the ratios are equivalent.



6. Grand Teton National Park is home to rugged mountains and pristine lakes.

4:5 and 16:25 YES New Mexico
NO California

7. Great Smoky Mountains National Park is home to historic structures and artifacts.

$\frac{2}{11}$ and $\frac{4}{22}$ YES Tennessee and
NO North Carolina
South Carolina
and North
Carolina

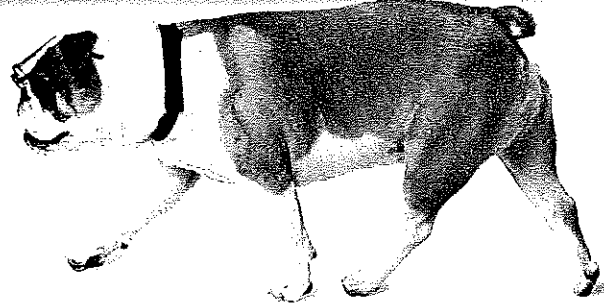
8. Zion National Park is home to a canyon that is 15 miles long and half a mile deep.

8 to 9 and 9 to 8 YES Texas
NO Utah

Go Fish

Answer the questions about the probability of catching each type of fish in the pond below. Write your answers in fraction form.

$$\text{Probability} = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$



1. What is the probability of catching a skunk fish? _____

2. What is the probability of catching an elephant fish? _____

3. What is the probability of catching a rabbit fish? _____

4. What is the probability of catching a monkey fish? _____

5. What is the probability of catching a chicken fish? _____

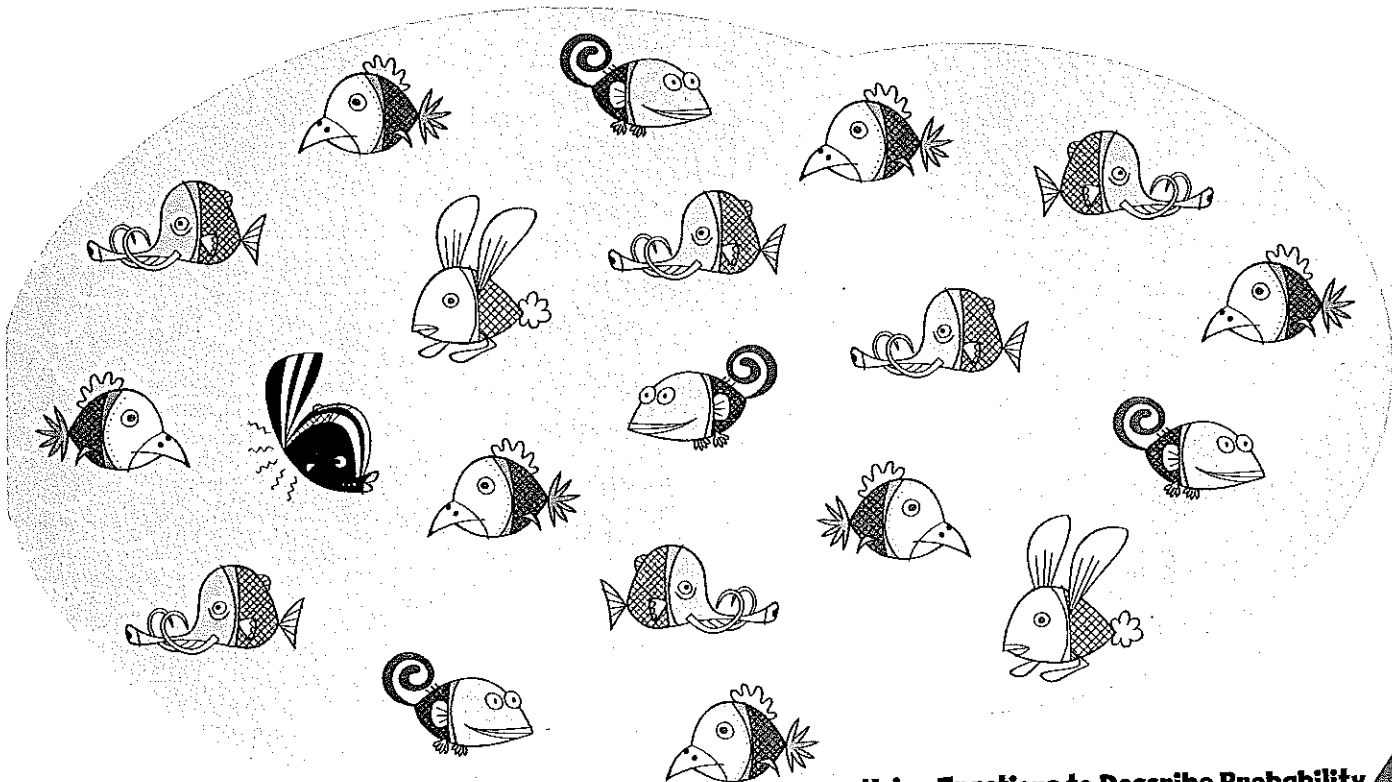
6. What is the probability of catching either an elephant fish or a rabbit fish? _____

7. What is the probability of catching either a skunk fish or a monkey fish? _____

8. What is the probability of catching either a chicken fish or an elephant fish? _____

9. What is the probability of catching anything other than a monkey fish? _____

10. What is the probability of catching a giraffe fish? _____



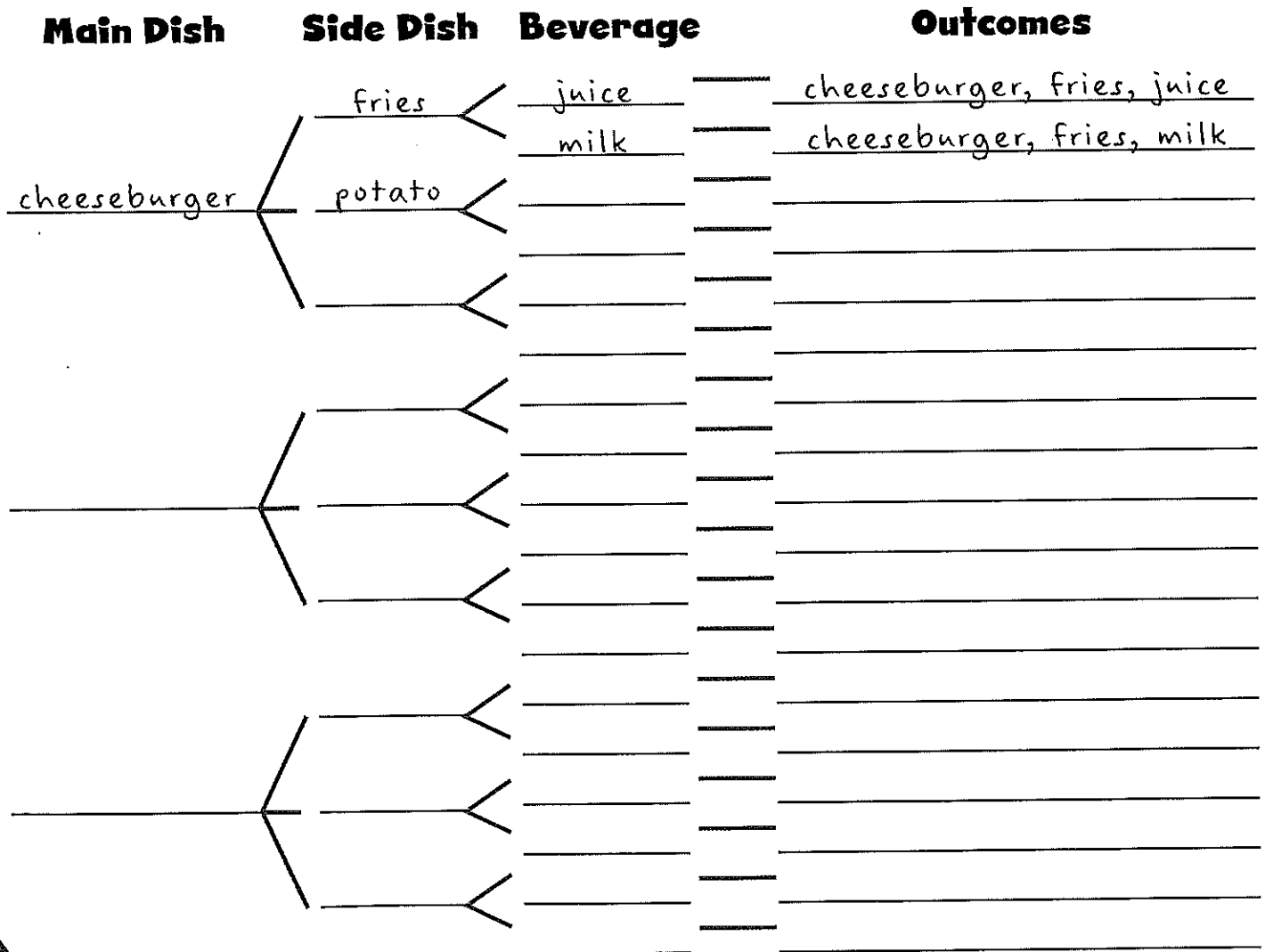
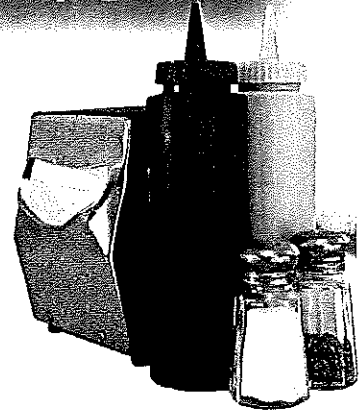
Diner Decisions

Claire is having lunch at Larson's Diner. She's going to choose one main dish, one side dish, and one beverage from the menu items below. Complete the tree diagram to show all of the possible combinations of her order. Then use the diagram to answer the questions on page 31.

- MAIN DISHES**
- Cheeseburger \$3
 - Garden Salad \$2
 - Beef Taco \$1

- SIDE DISHES**
- French Fries \$2
 - Baked Potato \$1
 - Rice \$1

- BEVERAGES**
- Juice \$2
 - Milk \$1





1. What is the probability that Claire will order a beef taco, french fries, and juice?

2. What is the probability that she will order a garden salad, rice, and milk?

3. What is the probability that her order will include a cheeseburger? _____

4. What is the probability that her order will include some form of potatoes?

5. What is the probability that her order will cost \$7? _____

6. What is the probability that her order will cost \$6? _____

7. What is the probability that her order will cost \$5? _____

8. What is the probability that her order will cost \$3? _____

