

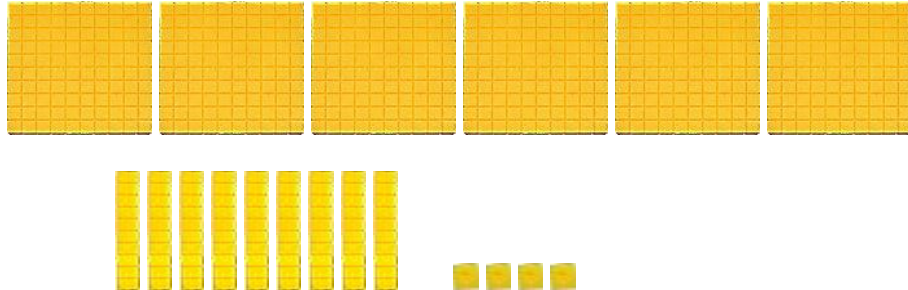
Section 2

Smiley Face Math
Grade 5, Worksheet I

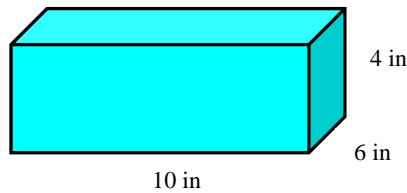
Name: _____



1. Show with the base ten blocks below that the quotient $694 \div 3$ is $231 \text{ r } 1$.



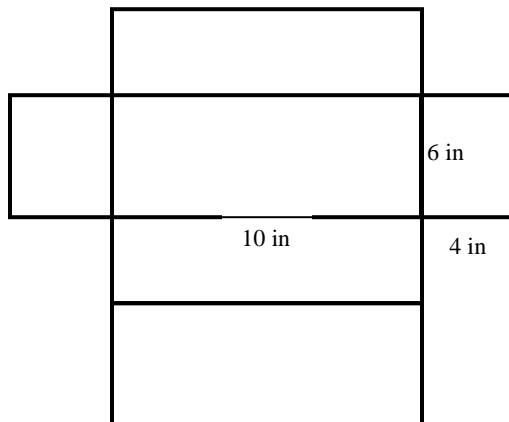
2. A typical adult shoe box from the store is 10 inches long by 6 inches wide by 4 inches high. What is the *volume* of such a shoe box, in cubic inches? I.e., how many cubes, 1 inch on a side, would fit inside the box?



Answer: _____ inches³



3. The *surface area* of a box is the area of a *net* that would cover the outside of the box, like wrapping paper. Label the dimensions of each face of the *net* for the box above, and find the total *surface area* of the six faces. (The *area* is how many 1-inch by 1-inch squares that would cover the outside surface.)



Answer: _____ inches²

- ☺ ☺ ☺ ☺ 4. Carson and his parents ordered pizza last night. They ordered a large pizza with tomatoes and onions. The cook cut the pizza into 12 equal slices. Carson ate $\frac{1}{4}$ of the pizza, his father ate $\frac{1}{3}$ of the pizza, and his mother ate $\frac{1}{6}$ of the pizza.



- Write a fraction number sentence for the pizza they ate all together: _____
- Find the answer, as a fraction, for your number sentence: ____ of the pizza
- Write a fraction number sentence for the amount of pizza left: _____
- Find the answer, as a fraction, for your number sentence: ____ of the pizza.

- ☺ ☺ 5. B.J. Upton is building a batting cage in his backyard. He has to install a net all around it so that balls don't go into his neighbor's yards. The batting cage will be a rectangular shape 11.75 meters long and 9.25 meters wide. How much netting does Upton need to go completely around the batting cage? _____ meters

Explain how you found your answer: Draw a picture to help.



- ☺ ☺ ☺ ☺ 6. A *prime number* of tiles is one where, if you try to make rectangles from that number of tiles, you can only make a "1-by-that number" type of rectangle. For example, 7 is a *prime number* of tiles because you can only make a 1-by-7 rectangle from seven tiles. Experiment with these numbers of tiles and decide if they are *prime numbers* or not. Circle those that *are* prime.

6 tiles

11 tiles

12 tiles

13 tiles

- ☺ ☺ 7. If a fraction has a *prime number* as its denominator, then you can't find another name for the fraction with a smaller denominator. Circle the fractions below that have a *prime number* as the denominator:

$$\frac{4}{6}$$

$$\frac{4}{11}$$

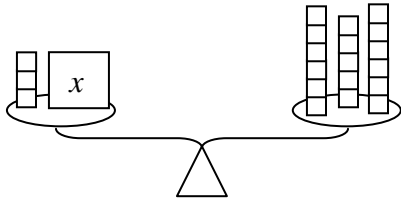
$$\frac{8}{12}$$

$$\frac{6}{13}$$

Smiley Face Math
Grade 5, Worksheet II

Name: _____

- ☺ ☺ ☺ 1. Find the missing number x in this equation: $3 + x = 17$. Answer: $x = \underline{\quad}$.

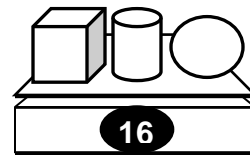
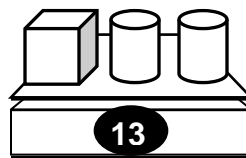
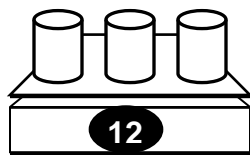


Explain how you can find the answer using the balance scale to the left. Each small square is 1 gram.

- ☺ ☺ 2. a. Lauren is planning a poetry reading with her 5 friends. She only has 90 minutes after school. Each poet, including Lauren, will read for the same amount of time. How long will each poet read? _____ minutes
- b. How can you check your answer to the problem above, using multiplication instead of division?



- ☺ ☺ ☺ 3. Find the weight of each solid shape.



a cylinder weighs ___ pounds; a cube weighs ___ pounds; a sphere weighs ___ pounds

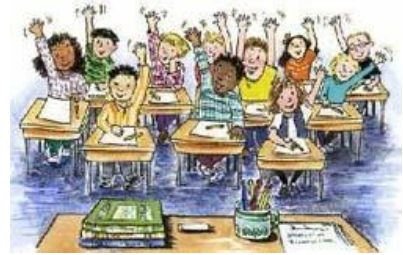
Explain how you found your answer:

☺ ☺ ☺ 4. There are 127 students coming into 5th grade next year. Each classroom can hold up to 23 students.

a. How many classrooms do they need? _____

b. How many students would be in each class if the principal wanted all classes to be equal, or as close as possible? _____

c. Explain your answer to (b) above. How did you decide?



☺ ☺ ☺ ☺ 5. List the first 15 multiples of 3: _____

List the first 10 multiples of 7: _____

List the first 10 multiples of 6: _____

What is the *least (smallest) common multiple* of 3, 7, and 6? _____

☺ ☺ ☺ ☺ 6. An *exponent* tells you how many times to multiply a number by itself. The *exponent* is written on the right-hand side of the number, using a smaller number. For example, 2^4 means $2 \times 2 \times 2 \times 2$ and equals 16. So we say $2^4 = 16$. Write what these exponents mean, and find the value:

a. 2^5 means _____ and so $2^5 =$ _____

b. 3^2 means _____ and so $3^2 =$ _____

c. 3^3 means _____ and so $3^3 =$ _____

d. 3^4 means _____ and so $3^4 =$ _____

Smiley Face Math
Grade 5, Worksheet III

Name: _____

☺ ☺ ☺

1. Parentheses in a math problem tells you to complete that part first. Solve the problems below using that hint.

a. Solve $18 - (5 - 3 + 8) \div 2 = \underline{\hspace{2cm}}$

b. Solve $40 + (10 \div 2) = \underline{\hspace{2cm}}$

c. Solve $30 - (15 \times 2) = \underline{\hspace{2cm}}$

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2. Solve the problem $403 \div 38$ in two ways. Show all your work.
(“ \approx ” below means *is about equal to*.)

Estimating:

$403 \div 38 \approx \underline{\hspace{2cm}}$

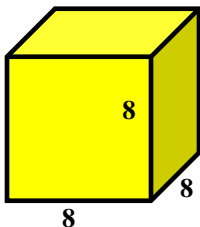
Using long division:

$38 \overline{)4032}$

Compare your answers. Was your estimate close to the actual answer? Which way was easier for you to solve? Explain.

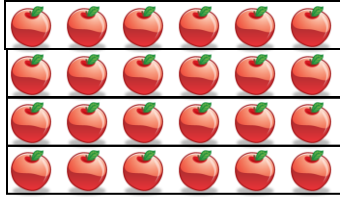
☺ ☺ ☺

3. The *surface area* of a figure is the *area* covered by all of its sides. The cube below has six sides, or faces. If each side of this cube is 8 inches long, what is the *surface area* of the cube?
(Hint: Remember the formula for area of a rectangle is: $area = length \times width$)



Answer: The *surface area* is _____ square inches.

4. If you want to find $\frac{1}{4}$ of 24, start by dividing 24 into four equal groups. The number in one of those groups is $\frac{1}{4}$ of 24. As you can see below, $\frac{1}{4}$ of 24 apples is 6 apples. And $\frac{3}{4}$ of those apples would be 3 of the groups, or 18 apples.

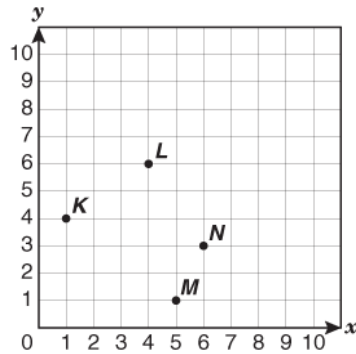


Now you try one. What is $\frac{1}{3}$ of a dozen eggs? ___ eggs

What is $\frac{2}{3}$ of a dozen eggs? ___ eggs

Draw a picture to show your answers:

5. The point **K** below has *coordinates* (1,4) because you go *out* 1 and *up* 4 to locate **K**. Use the coordinate grid to write the location for **L**, **M**, and **N**:



Answer:

The coordinates of L are ____

The coordinates of M are ____

The coordinates of N are ____

6. Follow these directions, using the grid in problem 5 above.

Make a dark line to connect:

a. (10,10) to (10,8)	b. (9,10) to (9,8)
c. (10,9) to (9,9)	d. (7,10) to (7,8)
e. (6,10) to (8,10)	f. (6,8) to (8,8)

Hold your paper in front of a mirror. What word did you spell? _____

7. Find the sum of **27.35** and **4.6**: Answer: the sum is _____

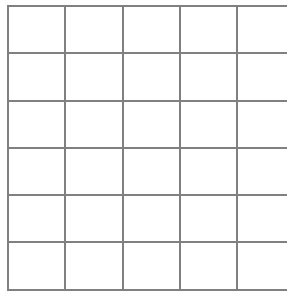
Now check your work by using a calculator. Fix your answer, if necessary, and explain how to do the problem correctly—why do you need to line up the decimal point when adding decimals?

Smiley Face Math
Grade 5, Worksheet IV

Name: _____

- ☺ 1. Becky had \$13 in a checking account that she set up with “Bank of Mom”. Becky wrote a check for \$20 to buy three CDs. How much money was in her checking account then?
Answer: Her account’s value was _____.

- ☺ ☺ 2. Tony started skateboarding down his street. He gradually went from 0 mph at 0 minutes, to 2 mph after 1 minute, to 4 mph after 2 minutes, and finally to 6 mph after 3 minutes. He continued at 6 mph until he hit a crack in the sidewalk at exactly 5 minutes, and fell off. Draw a graph to show Tony’s speed versus time during his ride. (Be sure to label your graph!)



- ☺ ☺ 3. At home you found a box that holds a dozen donuts. Eight donuts were left for you to choose from.

a. What *fraction* of the box of doughnuts was left for you to choose from? _____



b. If you ate 2 doughnuts, what *fraction* of the original box of doughnuts was left for the next person? _____

- ☺ ☺ ☺ 4. The school band played 19 shows in a school year. The total attendance for the 19 performances was 7,936. The band teacher reported to the local newspaper that the average attendance for each performance was about 400 people.



Explain how the band teacher may have made her estimate.

Why might the band teacher want to estimate, instead of giving the exact number to the newspaper?

- ☺ ☺ ☺ 5. Jamal’s family is driving “ straight through” from Tampa, FL to Chicago, IL for vacation. The distance is about 1,200 miles. His family arrives in Chicago in about 22 hours. **About** how many miles did Jamal’s family travel in 1 hour?

Answer: about _____ miles each hour

Explain how you estimated to find your answer:



- ☺ 6. You have saved \$152.17 in your bank account. You decide to make a small withdrawal to buy a friend a book. The book costs \$17.81. Then you find two dollar bills and a quarter and put that into your account. Now how much money is in your bank account?

Answer: \$ _____



- ☺ ☺ ☺ 7. Cedrick made 24 bag lunches for the class field trip. If Cedrick had made 4 more lunches, he would have made exactly 7 times as many bag lunches as Nolan did. How many bag lunches did Nolan make?



Write an equation to show this situation. Use b to stand for the number of bag lunches Norman made. Then solve the equation to find out how many Norman made.

Answer: Equation: _____

Solution: _____

- ☺ ☺ ☺ 8. One-third of a year, plus one-fourth of a year, is what fraction of a year?

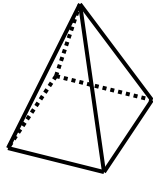
J	F	M	A	M	J	J	A	S	O	N	D
J	F	M	A	M	J	J	A	S	O	N	D
J	F	M	A	M	J	J	A	S	O	N	D

Answer: _____ of a year

Smiley Face Math
Grade 5, Worksheet V

Name: _____

- ☺ ☺ ☺ ☺ 1. Look at this diagram of a square pyramid.
- a. How many *faces* does it have? ____ b. How many *edges* does it have ____
- c. How many *vertices* does it have ____ d. How many right angles and how many acute angles are on the surface?
____ right angles and ____ acute angles



- ☺ ☺ ☺ 2. Use the coordinate grid below to plot the following points.

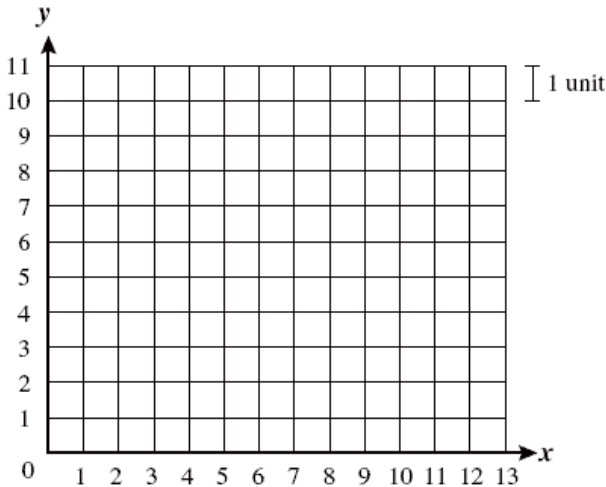
A (2,4)

B (9,4)

C (9,9)

D (2,9)

Draw lines to connect points A to B, B to C, C to D, and D to A.



- a. What shape did you create? _____
- b. What is the *area* of that shape? ____ units²
- c. Explain how you found the *area*:

- ☺ ☺ ☺ 3. Use the same shape from question 2. Draw a line to connect point A to point C.

- a. What two shapes do you have now? _____ Shade one of them.
- b. How can you use the area of the original shape, to find the area of the shaded shape?
Explain:
- c. What is the area of the shaded shape? _____ units²

☺ ☺

4. Lauren collects small clay statues of birds and horses. She accidentally knocked off 10 of her collection one day while cleaning, and picked up 26 legs. How many birds and how many horses did she knock off the shelf?

Answer: She knocked off ____ birds and ____ horses.



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5. Write the missing number to complete the pattern. Use mental math to complete.

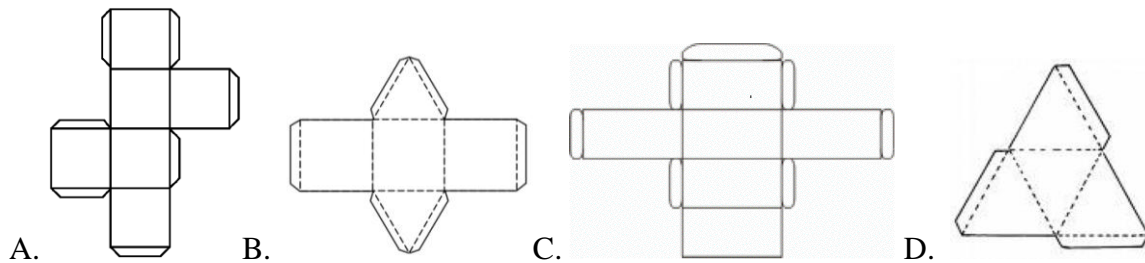
a. $450 \div 50 = 9$
 $4,500 \div 50 = 90$
 $45,000 \div 50 = \underline{\hspace{2cm}}$

b. $280 \div 70 = \underline{\hspace{2cm}}$
 $2800 \div 70 = 40$
 $28000 \div 70 = 400$

c. Rewrite these six division problems as multiplication problems:

☺ ☺ ☺ ☺

6. Match the following *nets* with the correct solid object: When each *net* is cut out, folded, and taped using the tabs shown, it forms one of these figures.



Rectangular Prism: ____

Cube ____

Triangular Prism: ____

Triangular Pyramid ____

Name one thing that all the *faces* have in common:

**Smiley Face Math
Grade 5, Worksheet VI**

Name: _____

- ☺ ☺ ☺ 1. Parentheses tell you what to do first, when you compute. Rewrite the equation using parentheses to make the statement true.

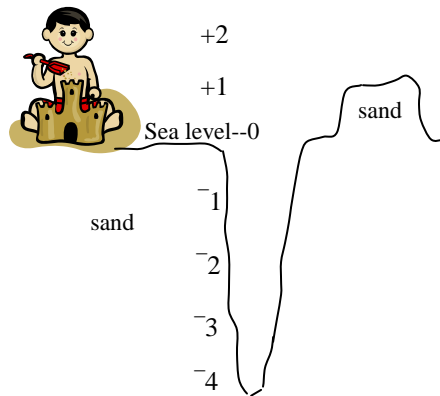
$$2 \times 7 + 21 \div 7 = 8$$

- ☺ ☺ ☺ ☺ 2. Eric likes to make sand castles at the beach. He also likes to dig deep holes to hide some treasures he finds there. This hole is 4 feet deep, and he calls the bottom of the hole -4 to show it is 4 feet below sea level.

- a. Put a check mark at $-2\frac{1}{2}$ feet.
 b. Put another check mark at $+2\frac{1}{2}$ feet.
 c. How many feet difference is there between the heights of $+2\frac{1}{2}$ feet and $-2\frac{1}{2}$ feet?

Answer: _____ feet

- d. How many feet difference is there between $-2\frac{1}{2}$ feet and -4 feet? Answer: _____ feet

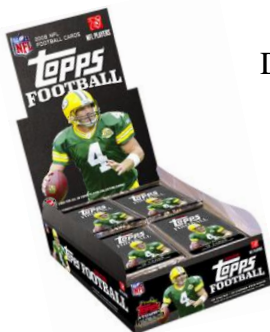


- ☺ ☺ ☺ 3. Eric has a system for saying if one of his numbers is greater than another number. He says that *one number is greater than another number if it is higher in the hole he dug*. For example, Eric says that $-2\frac{1}{2}$ is greater than -4 because $-2\frac{1}{2}$ is higher in the hole than -4 is.

Use Eric's system to place the integers -1 , $+2$, -3 , and 0 in the correct boxes below

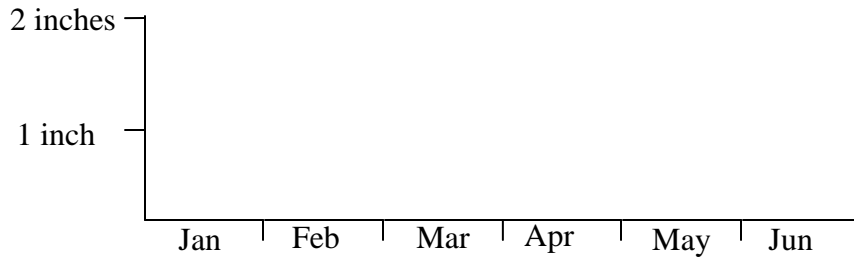
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- ☺ ☺ 4. Julie collects football cards. She buys 2 packs of cards every day after school. Each pack has 8 cards in it. She counts all of the cards in her collection—a total of 192 cards. How many days did she go to the card shop to buy cards? _____

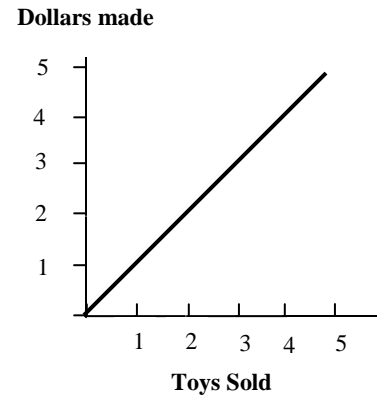
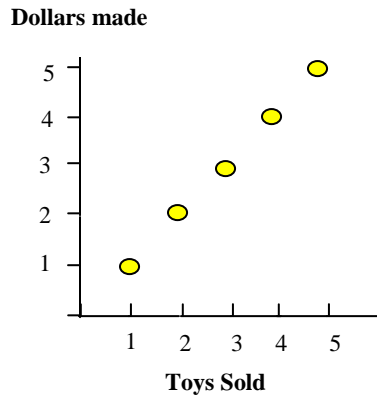


Drawing a picture may help.

- ☺ ☺ ☺ 5. Make a graph below that shows Juan’s hair length each month for six months. Usually at the start of each month, he gets his head shaved. Then it grows steadily till it reaches 1 inch on the last day of the month. But he skipped getting it cut on April Fool’s day—the first day of April—so by the end of April, it had grown twice as long as normal. He shaved it again at the start of May, and continued his normal routine.



- ☺ ☺ ☺ ☺ 6. Josie wanted to sell some of her toys at a garage sale. She asked \$1 for each toy. She wanted to make a graph of how much money she would make. Circle the graph below that would show this information the best, and then tell why you choose the graph you did.



Explanation:

- ☺ ☺ ☺ ☺ 7. Find a centimeter ruler around your house. Count the spaces between the centimeter marks—those are millimeters.
- How many millimeters are in a centimeter? _____ mm
 - Measure the distance around your wrist as accurately as you can. Answer: ___ cm & ___ mm
 - Measure the distance around your neck as accurately as you can: Answer: ___ cm & ___ mm
 - For most people, the distance around their neck is approximately twice the distance around their wrist. Is that true for you? _____

Smiley Face Math
Grade 5, Worksheet VII

Name: _____

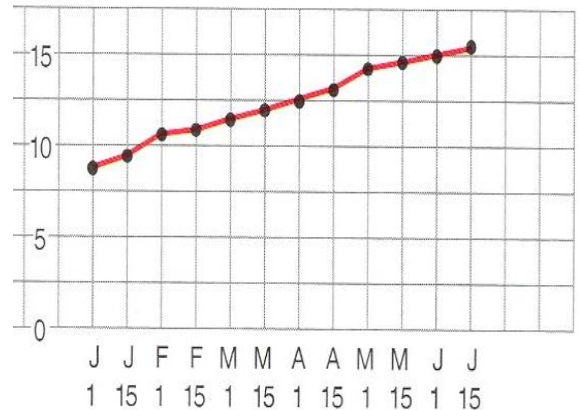


1. The graph below shows the number of daylight hours for the first six months of a year.

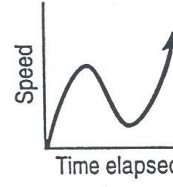
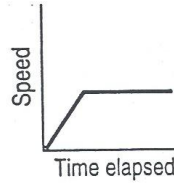
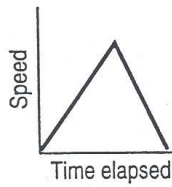
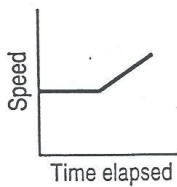
a. How many hours of daylight were recorded on April 1st? ____ on June 1st? ____

b. Which month had the least number of daylight hours? ____ How can you tell?

c. If the graph went for 6 *more* months, what would the line look like, and why?



2. Circle the graph below that best shows the speed of a man walking up a hill at a steady pace, and then running, faster and faster, down the other side.



3. Use the calendar. Answer the questions below.

January 2009						
Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

a. Circle the multiples of 2. Then draw a square around the multiples of 3.

b. Which numbers have both circles and squares around them? ____, ____, ____, ____, and ____

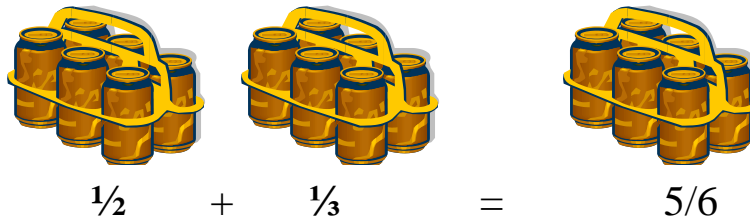
c. Which *single number* is your circled and squared numbers a multiple of? ____



4. If you want to add $\frac{1}{2}$ and $\frac{1}{3}$, one way to do so is to find a *common denominator* for the fractions. This means you have to find a *multiple* of both 2 and 3. From problem 3 above, what is the smallest number that is a multiple of both 2 and 3? _____

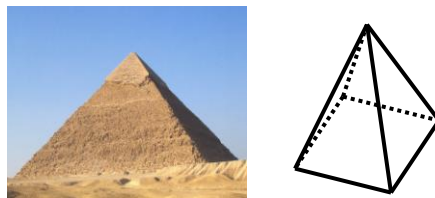
☺ ☺

5. Show how to find $\frac{1}{2} + \frac{1}{3}$ using the six-packs of cola below. Show why the answer of $\frac{5}{6}$ makes good sense for this problem.



☺ ☺ ☺

6. Dr. Jones asked his archeology team to identify the attributes of this square pyramid. He provided a diagram to help them.



How many *faces* does the pyramid have? _____ (Don't forget to count the bottom face.)

How many *vertices* does it have? _____ How many *edges* does it have? _____

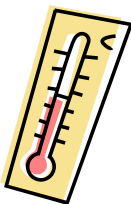
☺ 7. There are 139 students and teachers sailing to a local island for a fifth grade trip. There are several sail boats at the dock. Each boat holds 12 passengers.

How many sail boats are needed to carry everyone to the island?



☺ ☺

8. The temperature on Friday was a freezing -3° Celsius. Then it got even colder and went down 5 more degrees. What was the new temperature? Draw a picture below to help you find the answer.

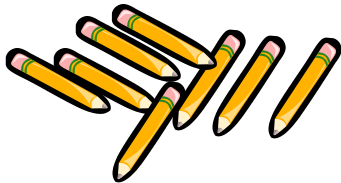


Answer: It was _____ degrees.

Smiley Face Math
Grade 5, Worksheet VIII

Name: _____

- ☺ ☺ ☺ 1. Maxine bought 8 new pencils during a “tax free” week before school started. She paid with a \$5 bill and got \$3.16 back as change. Explain why the equation $8p + \$3.16 = \5.00 represents this situation.



Explanation:

- ☺ ☺ ☺ ☺ 2. Solve the equation above to find the cost of one pencil p . Explain how you solved the equation.

- ☺ 3. Karen is 148.2 centimeters tall. Last year she was 140.2 centimeters tall. Mentally, figure out how much she has grown since last year. _____



- ☺ ☺ ☺ 4. Mark’s temperature was 100.1°F at bedtime. At midnight, his temperature had gone up 1.1°F . This morning his temperature was 98.9°F . By how much did his temperature go down from midnight to this morning? _____

Explain your answer.



- ☺ ☺ 5. Sharon and 4 friends decided to fill a bucket with water. Each of the people brought a cup of water. Each cup held enough water to fill $\frac{1}{4}$ of the bucket. How full was the bucket after they all poured their cups in? _____

Explain your answer.



- ☺ ☺ 6. Rebecca is looking for a two-bedroom apartment. In one apartment, the master bedroom is $14\frac{3}{4}$ feet wide and the other bedroom is $12\frac{2}{3}$ feet wide. Round the fractions to the nearest whole foot to find *about* how much wider the first bedroom is.

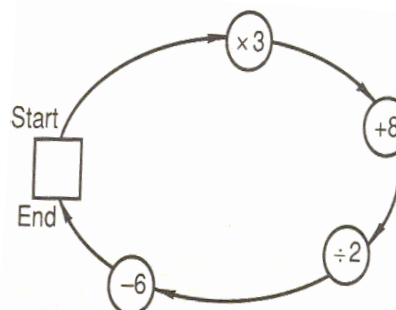
Answer: It's about _____ feet wider.



- ☺ ☺ 7. Tonight's homework has 6 problems. Jake has $\frac{2}{3}$ of his homework done, and Beth has $\frac{5}{6}$ of hers done. Who has more homework completed? _____ How much more, as a fraction, has that person done? _____ Draw a picture to show how much more that person has done.



- ☺ ☺ ☺ 8. If you begin with a certain one-digit number and follow the arrows, you will end with the starting number. Write the number in the box.



Smiley Face Math
Grade 5, Worksheet IX

Name: _____



1. Bryan’s baseball team and their families are attending the Tampa Bay Rays’ opening game. Each ticket costs \$45. Bryan is collecting money to buy the tickets for the entire group. He has collected \$2,520 and goes to buy the tickets. How many tickets is Bryan able to purchase with the money he has collected? _____

Explain how you came to your answer:



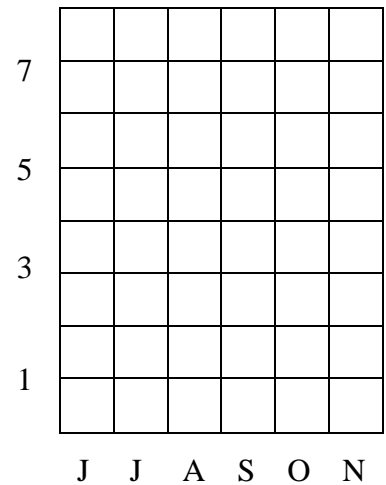
2. Look at the data in the chart below. Create a line graph using the data. Use the middle of each month to plot the rainfall. Remember that line graphs are great to see data change over a period of time.

Rainfall in Florida

Month	Inches
June	7.3
July	6.8
August	6.3
September	5.8
October	2.9
November	2.3



Between what two months is there the greatest difference in rainfall?
 _____ and _____



Be sure to:

- title the graph
- write the numbers for the scale
- label both horizontal and vertical axes
- accurately graph the data



3. Lauren walked $1\frac{1}{2}$ miles to her friend’s house, and then they both walked $1\frac{3}{4}$ miles to the mall. They took the bus home. How far did Lauren walk altogether? _____



☺ ☺ ☺ 4. You are planning a party before you start 5th grade. At the store, you want to buy the following items:

- Soda: \$1.79
- Water: \$2.14
- Brownies: \$2.97
- Fruit: \$10.37
- Hot Dogs: \$4.05
- Hot Dog Buns: \$0.88

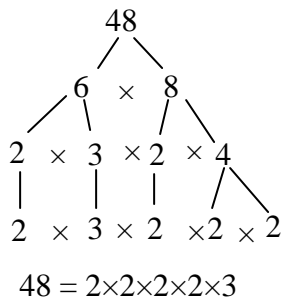


- a) Since you don't want to bring your calculator in the grocery store with you, round each item to the nearest dollar. What's the estimated total? _____
- b) Is the \$20 bill you brought enough? _____ Why or why not?
- c) Now find the exact cost. _____

☺ ☺ ☺ 5. A *prime number* is a number that has only 1 and itself as factors. No other numbers divide into it without a remainder. Circle all of the numbers below that are *prime numbers*.

14 5 7 21 23 45 2 9 39

☺ ☺ 6. *Prime factorization* is finding all of the prime factors of a certain number. To help you find them, try using a *factor tree* like this one for 48.



Find any two factors of 48.

Find factors of those two factors.

Keep factoring until all the factors at the bottom of the tree are prime.

Write 48 as the product of prime factors.

Try these two. Write the *prime factorization* of 45 and of 36. 45 = _____ 36 = _____

☺ ☺ 7. From the problem above, you know that $48 = 2 \times 2 \times 2 \times 2 \times 3$. You learned in Worksheet II to write such a number using *exponents*. So $48 = 2^4 \times 3$ is a short way to write the prime factorization. Write the prime factorization of 45 and 36 using exponents.

45 = _____ and 36 = _____

Smiley Face Math
Grade 5, Worksheet X

Name: _____



1. You have $\frac{5}{6}$ of a cup of juice in your glass. Your little brother only has $\frac{1}{3}$ of a cup in his glass. He wants to have the same amount that you do. What fraction of a cup does he need to add to have the same amount as you? _____ of a cup

Show how you can get an answer and check your answer.



2. Use the table to answer *about* how many miles Lisa ran for the month of August. _____

Week	Distance (mi)
1	$8\frac{2}{3}$
2	$7\frac{1}{4}$
3	$5\frac{7}{8}$
4	$6\frac{1}{4}$



3. School begins at 8:40 am and ends at 2:40 pm.

How many hours are in the school day? _____

How many minutes are in the school day? _____



What is a more precise way to measure how long a school day is? _____



4. Jasper and Alice each bought a bag of peanuts at the baseball game. Each bag contains 24 peanuts. Jasper ate $\frac{2}{3}$ of his bag and Alice ate $\frac{3}{4}$ of her bag. How many peanuts did each person eat? Jasper ate _____ peanuts and Alice ate _____ peanuts.

How many peanuts were left over altogether? _____ Use the space below to draw a diagram to show how many peanuts each person left in their bag, and the total.



- ☺ ☺ 5. During a football game, Tommy threw a pass $26\frac{1}{3}$ yards down the field. How many feet did the ball travel? _____ How many inches? _____
(Hints: 1 yard = 3 feet and 1 foot = 12 inches)



- ☺ ☺ 6. Complete a number line below to help put the following numbers in order from least to greatest: 5, -3, 2, -4, 0, -2, -1, 1, 4 Circle the number that is the very largest of these.



- ☺ ☺ 7. Measure the line segment below using centimeters. Answer: It's ____ cm long.



What fraction of a meter does the line up above represent? Answer: It's ____ of a meter.

- ☺ ☺ ☺ 8. Solve this poem: *A multiple of eleven I be,
Not odd, but even, you see.
My digits a pair,
When multiplied there,
Make a cube and a
Square out of me.*

What number am I? ____