

MATH 3 - Do ★ problems (others are optional)

Prime Time

List all the factors of each number.

1. 12

★ 2. 45

★ 3. 41

optional)

Tell whether each number is prime or composite.

4. 53

5. 86

★ 6. 95

★ 7. 17

READ ALL DIRECTIONS!

Tell whether the second number is a multiple of the first.

8. 2; 71

9. 1; 18

★ 10. 3; 81

★ 11. 4; 74

Write the prime factorization. Use exponents where possible.

★ 12. 78

★ 13. 126

★ 14. At a store, hot dogs come in packages of eight and hot dog buns come in packages of twelve. What is the least number of packages of each type that you can buy and have no hot dogs or buns left over?

15. Find the least common multiple and the greatest common factor for each pair of numbers:

a. 8 and 12

★ b. 7 and 15

c. 11 and 17

★ d. 36 and 108

LCM:

GCF:

Comparing Bits and Pieces

Write each mixed number as an improper fraction.

★ 1. $1\frac{7}{8}$

★ 2. $2\frac{3}{4}$

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

Write each decimal as a fraction.

4. 0.6

★ 5. 1.25

★ 6. 0.74

7. 0.29

Write each improper fraction as a mixed number in simplest form.

★ 8. $\frac{15}{2}$

★ 9. $\frac{8}{3}$

10. $\frac{5}{2}$

11. $\frac{7}{3}$

Write each fraction as a decimal.

12. $\frac{9}{100}$

13. $\frac{7}{25}$

★ 14. $\frac{3}{50}$

★ 15. $\frac{1}{125}$

Order from least to greatest.

16. $\frac{1}{4}, \frac{1}{3}, \frac{1}{6}$

★ 17. $\frac{1}{2}, \frac{5}{6}, \frac{7}{8}$

★ 18. $\frac{1}{4}, \frac{2}{5}, \frac{3}{8}$

Compare each pair of fractions. Use $<$, $>$, or $=$. Fill in the \square .

★ 19. $\frac{7}{8} \square \frac{3}{10}$

★ 20. $\frac{4}{5} \square \frac{1}{2}$

21. $\frac{6}{12} \square \frac{4}{8}$

22. $\frac{7}{15} \square \frac{11}{15}$

Write each of the decimal numbers in words.

23. 12.873

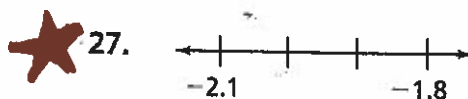
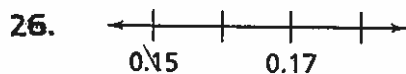
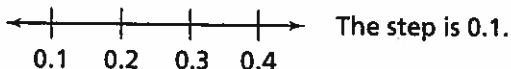
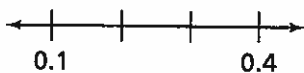
★ 24. 8.0552

★ all parts ↓

25. In a class of 24 sixth-graders, 25% walk to school, $\frac{1}{8}$ ride bicycles to school, $\frac{1}{3}$ take the bus to school, and the remainder of the class are driven to school by their parents or guardians.
- How many students in the class walk to school? Explain your reasoning.
 - How many students in the class ride bicycles to school? Explain your reasoning.
 - How many students in the class take the bus to school?
 - What fraction of the class are driven to school by their parent or guardian? Explain your reasoning.
 - What percentage of the students in the class walk, ride bicycles or the bus, or are driven to at school by a parent or guardian? Explain your reasoning.

Label the unlabeled marks with decimal numbers.

Sample:



★ 28. Fill in the missing parts of the table.

Fraction	Decimal	Percent
$\frac{3}{8}$		
	0.88	
		35%
$1\frac{1}{4}$		
	0.625	
		275%

NOTE: * Do NOT use a calculator on this unit's work! P6.4

Let's Be Rational

★
all
parts

1. Jack and Helen are making cookies. The recipe says to combine $\frac{1}{2}$ cup of butter with $\frac{3}{4}$ cup chocolate chips and $\frac{3}{8}$ cup chopped nuts.

a. When these three ingredients are mixed together, how many cups of the mixture will Jack and Helen have? Show your work.

b. Jack and Helen decide to triple the recipe.

i. How many cups of butter will be needed?

ii. How many cups of chocolate chips will be needed?

iii. How many cups of chopped nuts will be needed?

c. When the ingredients for the tripled recipe are combined, how many cups of the mixture will Jack and Helen have?

2. Find each quotient. Show your strategy! (Use Khan Academy if you forget!)

★ a. $12 \div \frac{1}{2}$

b. $12 \div \frac{1}{3}$

★ c. $3 \div \frac{2}{3}$

★ d. $\frac{7}{8} \div 4$

★ e. $1\frac{2}{3} \div 6$

f. $\frac{5}{6} \div \frac{1}{3}$

Estimate each sum. Use the benchmarks 0 , $\frac{1}{2}$, and 1 . (Do not actually solve!)

★ 3. $\frac{5}{16} + \frac{5}{8}$

★ 4. $\frac{10}{12} + \frac{4}{5}$

5. $\frac{1}{10} + \frac{1}{2}$

★ 6. How many bows can you make from 5 meters of ribbon if making a bow takes $\frac{1}{4}$ of a meter of ribbon?

Find each sum or difference. Show your strategy!

7. $7\frac{1}{3} + 5\frac{11}{12}$

8. $11\frac{7}{10} + 4$

9. $2\frac{2}{3} + 4\frac{3}{4}$

★ 10. $10\frac{11}{16} - 3\frac{7}{8}$

★ 11. $8\frac{1}{3} - 2\frac{3}{8}$

★ 12. $9 - 3\frac{2}{5}$

13. A kitten eats $\frac{1}{4}$ cup of cat food. Another cat in the same household eats 6 times as much. How much food does the cat eat?

- ★ 14. Ken used all of a piece of lumber to build a bookshelf. If he made three shelves that are each $2\frac{1}{2}$ feet long, how long was the piece of lumber?

Find each product. Show your strategy! (Cross simplify?!)

15. $\frac{2}{3}$ of $\frac{1}{4}$

16. $\frac{2}{5} \times \frac{1}{2}$

★ 17. $\frac{1}{4}$ of $\frac{4}{5}$

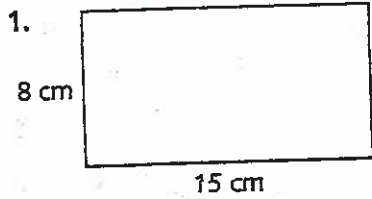
★ 18. $\frac{5}{6} \times \frac{2}{5}$

★ 19. $3\frac{1}{3} \times 3\frac{3}{10}$

20. $5\frac{1}{2} \times \frac{2}{5}$

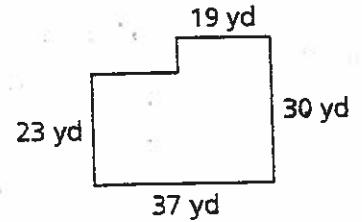
★ 21. $1\frac{2}{3} \times 3\frac{3}{4}$

Find the perimeter and area of each figure. **Show formula work!**



★ 2. $l = 18 \text{ m}, w = 12 \text{ m}$

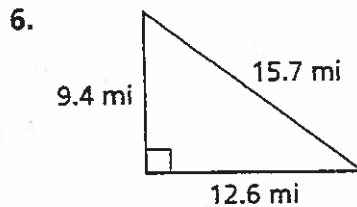
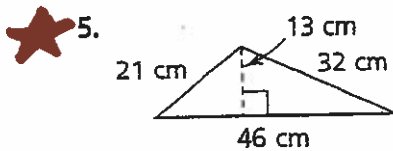
★ 3.



Solve.

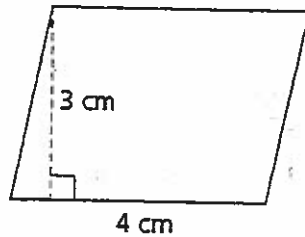
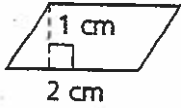
- ★ 4. The area of a triangle is 6 square units. Both the height and the length of the base are whole numbers. What are the possible lengths and heights?

Find the area of each triangle. **Show formula work!**



- ★ 7. Tracy has 40 feet of material to make the perimeter of a rectangular sandbox for her little brother.
- both parts*
- ↓
- What rectangle with whole-number side lengths would give the sandbox with the greatest area?
 - What rectangle with whole-number side lengths would give the sandbox with the least area?

- ★ 8. Find the area of each parallelogram below. Show formula work!



9. The length of a rectangle is 8 centimeters. The width is 6 centimeters.

a. What is the area?

b. What is the perimeter?

- ★ 10. The area of a rectangle is 45 square inches. One dimension is 5 inches. What is the perimeter?

★
all
parts



1. a. A Student Council wants to throw a party for students. They decide to have a breakfast catered and they compare bids of two companies. The Catering Crew charges \$8 per student. Urbandale Catering Company charges a set fee of \$160 plus \$6 per student. Make tables that show costs for each company in cases where 20, 40, 60, 80, 100, and 120 students would attend. (see next page)

- b. Plot the (*number of students, catering costs*) on a graph. Use different colors or plotting symbols for points to show the two catering companies. (see next page)

- c. Write equations relating total cost and number of students for each catering company.

Catering Crew:

Urbandale:

- d. Why, if at all, does it make sense to connect the dots on your plots of part (c)?

- e. Is there any number of students for which both companies would charge the same rental fee?

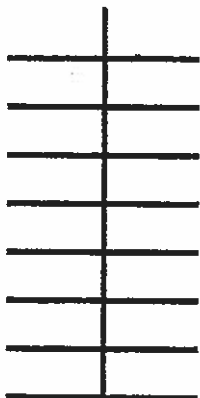
- f. If 60 students signed up to come to the breakfast, which company should the Student Council select? What if 100 students signed up for the breakfast?

60 →

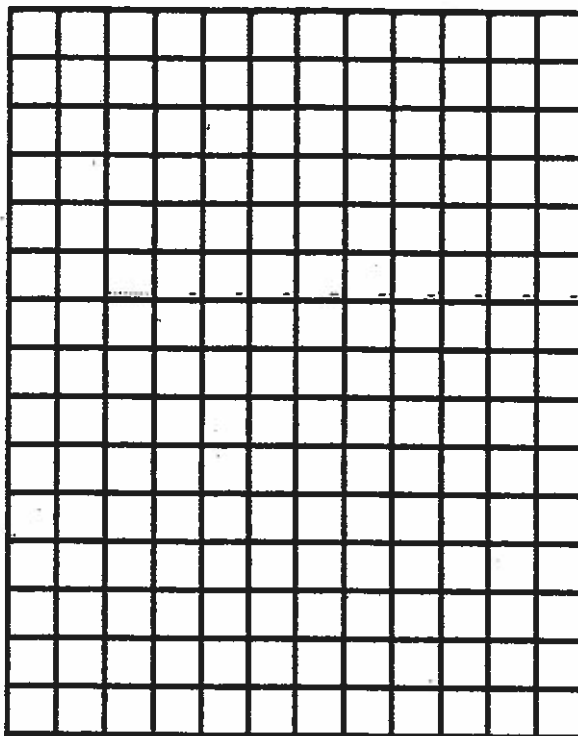
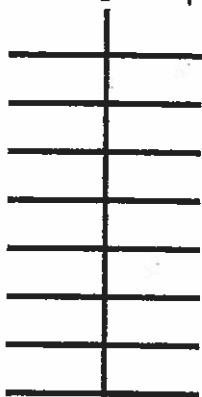
100 →

★ 1.

Catering Crew



Urbandale Catering Company



★

all parts



2. In parts (a)–(e), use symbols to express the rule as the equation. Use single letters to stand for the variables. Identify what each letter represents.
 - a. The perimeter of a rectangle is twice its length plus twice its width.
 - b. The area of a triangle is one-half its base multiplied by its height.
 - c. Three big marshmallows are needed to make each s'more.
 - d. The number of quarters in an amount of money expressed in dollars is four times the number of dollars.

NOTE: Do NOT use a calculator for this unit!

First estimate. Then find each sum or difference. Show your strategy!

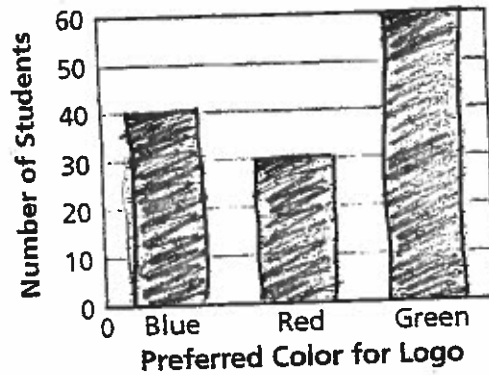
★ 1. $0.6 + 5.8$

2. $2.1 + 3.4$

★ 3. $3.4 - 0.972$

- ★ 4. The student council at Metropolis Middle School conducted a survey to see whether students would prefer blue, red, or green as the new color for the school logo. The results of the survey are shown in the bar graph below.

all parts



- What is the total number of students who were surveyed?
- What percent of students surveyed preferred blue?
- What percent of students surveyed preferred red?
- What percent of students surveyed preferred green?
- If 970 students attend Metropolis Middle School, what percent of the students were surveyed?

Order each set of decimals on a number line.

5. 0.2, 0.6, 0.5

★ 6. 0.26, 0.3, 0.5, 0.59, 0.7



Find each product.

Show your strategy!

$$\begin{array}{r} \star 7. \quad 5.342 \\ \times 13 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 0.19 \\ \times 0.05 \\ \hline \end{array}$$

$$\begin{array}{r} \star 9. \quad 6.4 \\ \times 0.09 \\ \hline \end{array}$$

Find each quotient.

Show your strategy!

$$\star 10. \quad 0.4 \overline{)1.08}$$

$$\star 11. \quad 0.68 \div 0.2$$

$$12. \quad 0.02 \overline{)0.06}$$

$$\star 13. \quad 9 \overline{)21.6}$$

$$\star 14. \quad 15 \overline{)123}$$

$$15. \quad 108 \div 5$$

READ



16. For each of the following, decide if the quotient is less than 1 or greater than 1.

a. $9.22 \div 2.8$

$$\star b. \quad 0.9 \div 0.3$$

c. $12.6 \div 11.8$

$$\star d. \quad 5.6 \div 9.9$$

(Without solving!)

★ 1. Glenda rolled two six-sided number cubes nine times and computed the sum of the numbers rolled each time.

all

a. If the mean sum of Glenda's rolls was 6, what was the total of the nine sums Glenda rolled?

parts

b. Suppose Glenda's rolls were 12, 7, 3, 10, 9, 2, 11, 7, and 8. *Show your strategy!*

i. What is the median of Glenda's rolls?

ii. What is the mean of Glenda's rolls?

iii. What is the mode of Glenda's rolls?

iv. Which do you think is the best indicator of a typical roll Glenda made, the median, mean, or mode? Explain your reasoning.

★ 2. Mr. Watkins arranged the quiz scores of his afternoon math class from least to greatest: 5, 5, 6, 6, 6, 7, 7, 7, 7, 7, 8, 8, 8, 8, 8, 8, 9, 9, 9, 10, 10

all parts

a. How many students are in Mr. Watkins's afternoon math class?

b. How do the quiz scores vary?

c. What is the mode of the scores?

d. What is the median of the scores?

For Exercises 3 and 4, use this information.

Mr. Johnson's class of 20 students collects 180 cans of food for the food drive.

Ms. Smith's class of 25 students collects 200 cans of food.

★

3. Which class has a greater mean number of cans of food?

A. Mr. Johnson's class

B. Ms. Smith's class

C. The means are equal.

D. There isn't enough information to tell.

★

4. Which class has a greater median number of cans of food?

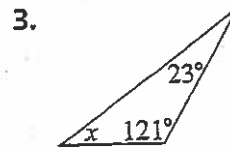
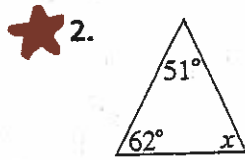
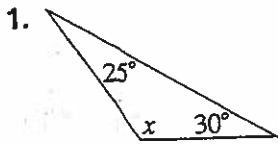
F. Mr. Johnson's class

G. Ms. Smith's class

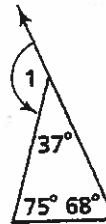
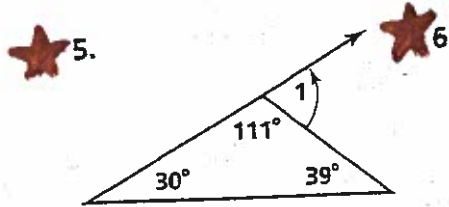
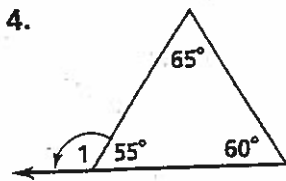
H. The means are equal.

J. There isn't enough information to tell.

Find the measure of each angle labeled x .



Find the measure of angle 1 in each figure.



Use the diagram below to identify all the polygons for each name. List as many letters as there are that fit the name.

7. quadrilateral

8. parallelogram

9. rhombus

as there are that fit the name.

b, c, e

10. rectangle

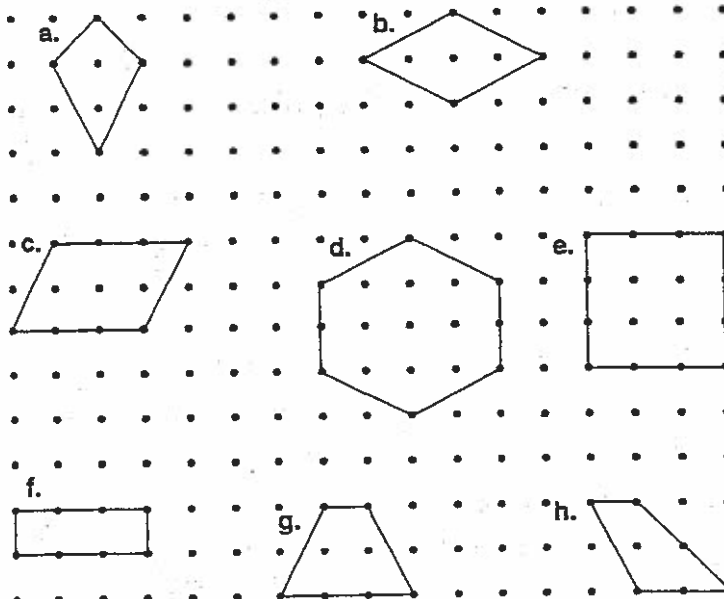
11. square

12. trapezoid

(Ex)

all

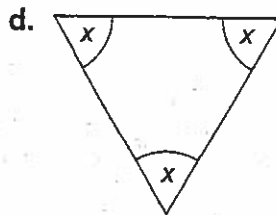
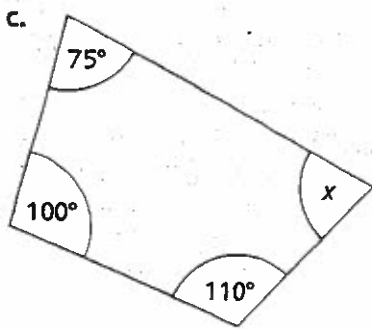
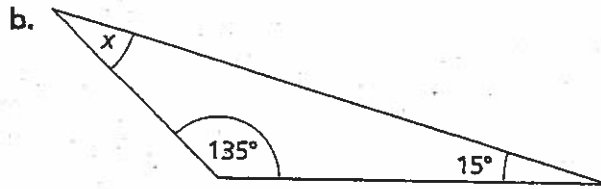
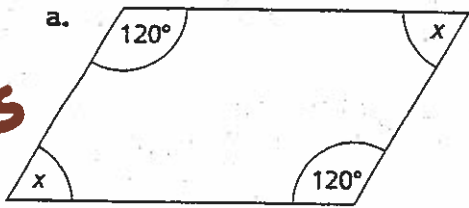
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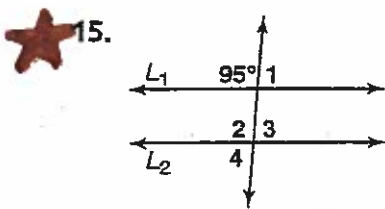
★ 13. An isosceles triangle has two 50° angles. What is the measure of the third angle? Explain how you found your answer.

★ 14. For each of the shapes below, find the unknown angle measure without using your angle ruler.

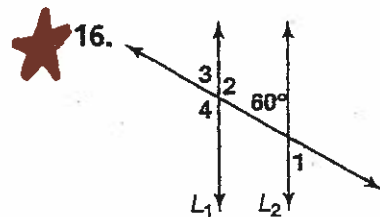
all parts ↓



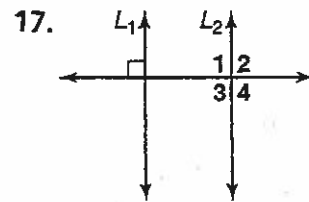
In each diagram below, lines L_1 and L_2 are parallel lines cut by a transversal. Find the measure of each numbered angle.



$m\angle 1 =$ _____
 $m\angle 2 =$ _____
 $m\angle 3 =$ _____
 $m\angle 4 =$ _____



$m\angle 1 =$ _____
 $m\angle 2 =$ _____
 $m\angle 3 =$ _____
 $m\angle 4 =$ _____



$m\angle 1 =$ _____
 $m\angle 2 =$ _____
 $m\angle 3 =$ _____
 $m\angle 4 =$ _____

