

SIXTH GRADE
MATH WITH
CONFIDENCE

PART
A



STUDENT WORKBOOK PART A

KATE SNOW

Lesson Activities

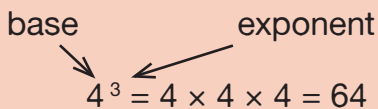
A

$1 \times 1 \times 1 \times 1 \times 1 =$ _____ $2 \times 2 \times 2 \times 2 =$ _____ $3 \times 3 \times 3 =$ _____

B

Exponents

Exponents are a shortcut for writing repeated multiplication. The base is the number you multiply. The exponent tells how many times the base is multiplied.



We read 4^3 as “4 to the third power” or “4 to the power of 3.”

Ex. $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$

Ex. $7^2 = 7 \times 7 = 49$

Ex. $3^0 = 1$
Any number to the power of 0 is 1.

$3^4 =$ _____

$10^3 =$ _____

$36^0 =$ _____

C

Exponent Three in a Row (2-Player Game)



Player 1 START	10×10	2	$3 \times 3 \times 3$	5×5	$0 \times 0 \times 0$
$2 \times 2 \times 2 \times 2$	6^2	10^3	2^2	5^3	4×4
3×3	4^1	5^2	10^2	7^2	$1 \times 1 \times 1 \times 1$
$10 \times 10 \times 10$	2^3	2^1	4^2	1^4	2×2
$5 \times 5 \times 5$	7×7	4	$2 \times 2 \times 2$	6×6	Player 2 START

Practice 

Match.

5×5

6^3

2 to the fifth power

$6 \times 6 \times 6$

10^3

5 to the power of 2

$10 \times 10 \times 10$

5^2

10 to the third power

$3 \times 3 \times 3 \times 3 \times 3 \times 3$

2^5

6 to the power of 3

$2 \times 2 \times 2 \times 2 \times 2$

3^6

3 to the sixth power

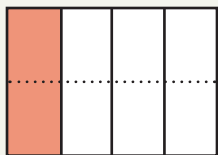
Complete the chart.

	Base	Exponent	Repeated Multiplication	Value
2^6	2	6	$2 \times 2 \times 2 \times 2 \times 2 \times 2$	64
4^3				
			8×8	
			$10 \times 10 \times 10 \times 10$	
	1	7		
	7	1		
★	3			27
★		2		81

Review



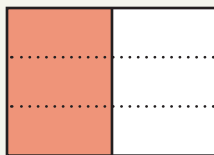
Complete the equivalent fractions.



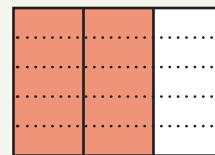
$$\frac{1}{4} = \frac{\quad}{8}$$



$$\frac{3}{4} = \frac{\quad}{8}$$



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



$$\frac{2}{3} = \frac{\quad}{15}$$

Use logical reasoning to complete with $<$, $>$, or $=$.
You do not need to find the exact value of the expressions.

$$26 \times (5 + 2) \bigcirc 27 \times (5 + 2)$$

$$38 \times 5 + 19 \times 3 \bigcirc 38 \times 5 - 19 \times 3$$

$$8 \times (7 + 3) \bigcirc 8 \times 7 + 8 \times 3$$

$$27 \times 15 \times 1 \bigcirc 27 \times 15 \times 0$$

$$16 \times 24 \times 73 \bigcirc 73 \times 24 \times 16$$

$$97 + 38 + 72 \bigcirc 72 + 38 + 97$$

Complete.

$$3,289 + 10 = \underline{\hspace{2cm}}$$

$$456 \times 10 = \underline{\hspace{2cm}}$$

$$20,000 \div 10 = \underline{\hspace{2cm}}$$

$$3,289 + 100 = \underline{\hspace{2cm}}$$

$$456 \times 100 = \underline{\hspace{2cm}}$$

$$20,000 \div 100 = \underline{\hspace{2cm}}$$

$$3,289 + 1,000 = \underline{\hspace{2cm}}$$

$$456 \times 1,000 = \underline{\hspace{2cm}}$$

$$20,000 \div 1,000 = \underline{\hspace{2cm}}$$

Match.

3 times the sum of 6 and 2

$$(3 \times 6) + 2$$

The product of 3 and 6,
increased by 2

$$3 \times (6 + 2)$$

The difference between 6 and 3,
multiplied by 2

$$(6 \div 3) - 2$$

The quotient of 6 and 3,
decreased by 2

$$(6 - 3) \times 2$$

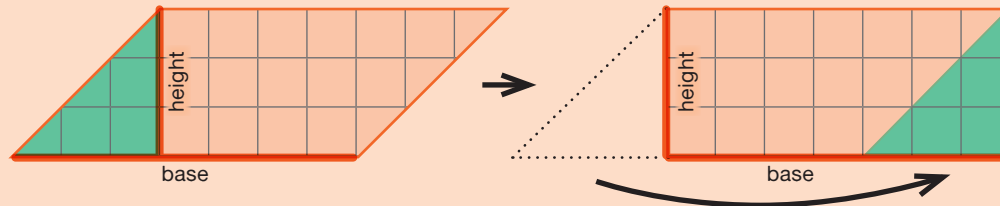
Lesson Activities

A

Area of a Parallelogram

Any parallelogram can be transformed into a rectangle. Just cut off the right triangle at one end and move it to the other end! You create a rectangle with the same base and height as the parallelogram.

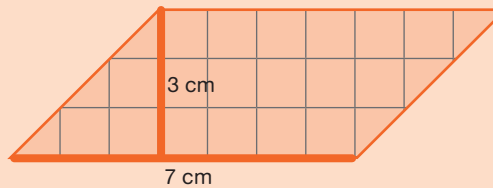
To find the area of a parallelogram, multiply the base by the height.



$$\text{Area} = \text{base} \cdot \text{height}$$

$$A = b \cdot h$$

Ex. What is the area of this parallelogram?

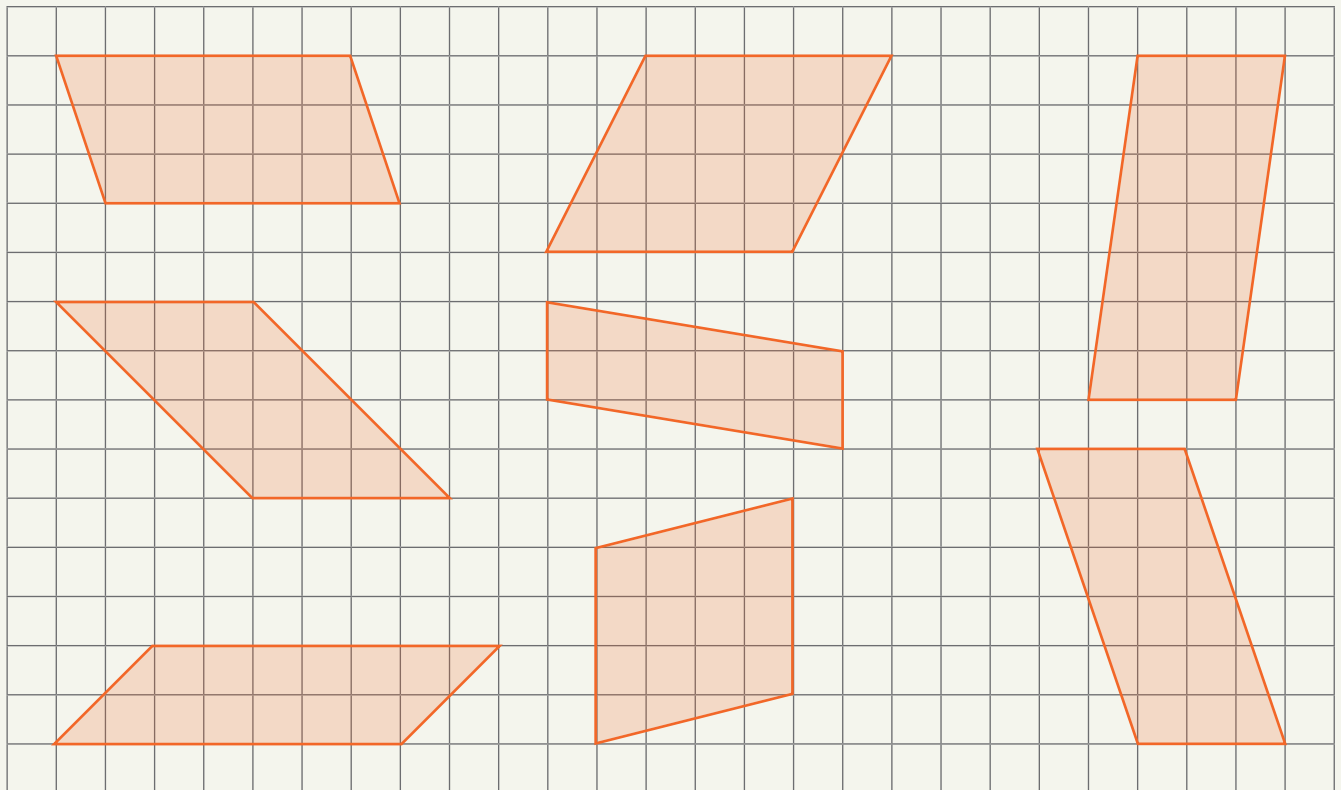


$$A = 7 \text{ cm} \cdot 3 \text{ cm}$$

$$A = \mathbf{21 \text{ cm}^2}$$

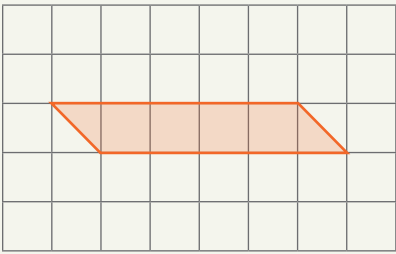
B

Parallelogram Pick (2-Player Game)

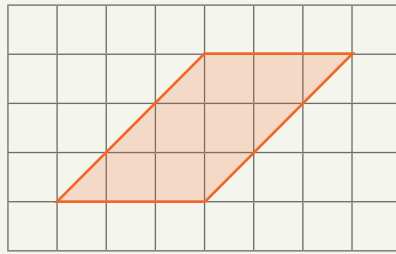


Practice

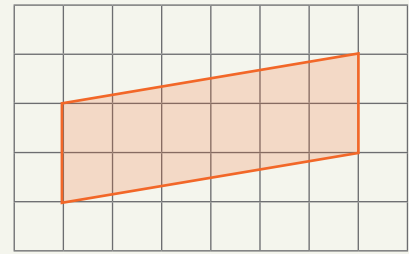
Find the area of each parallelogram.



Area: _____ units²

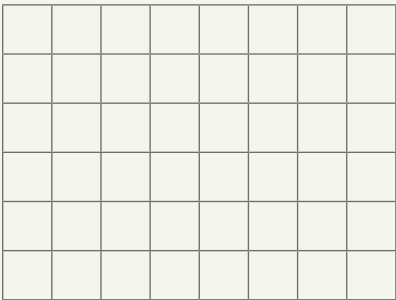


Area: _____ units²



Area: _____ units²

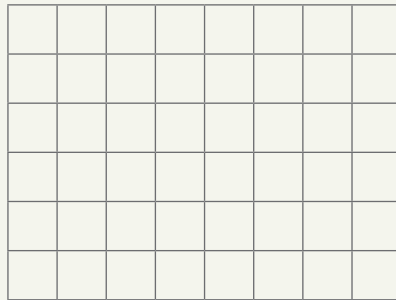
Draw a parallelogram with the given base and height. (Many different parallelograms are possible.) Then, find the area of your parallelogram.



Base: 5 units

Height: 3 units

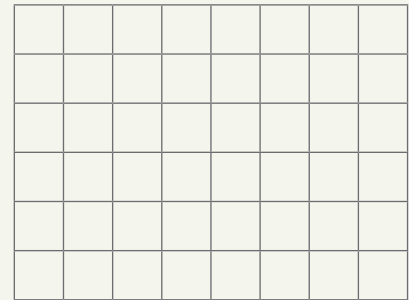
Area: _____ units²



Base: 3 units

Height: 5 units

Area: _____ units²



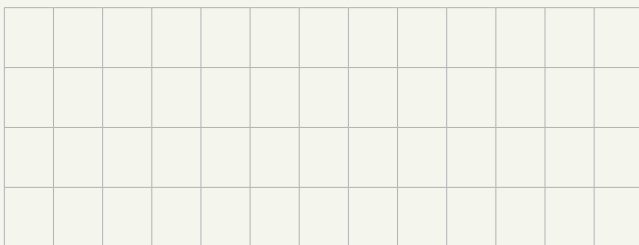
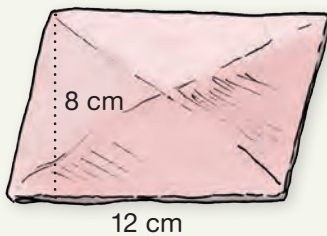
Base: 3 units

Height: 3 units

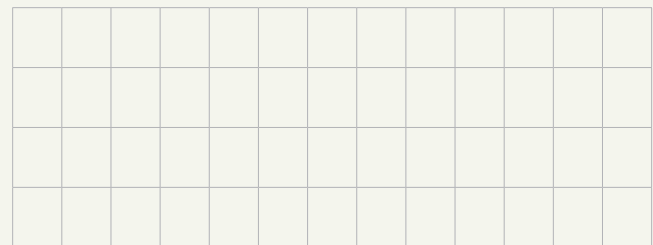
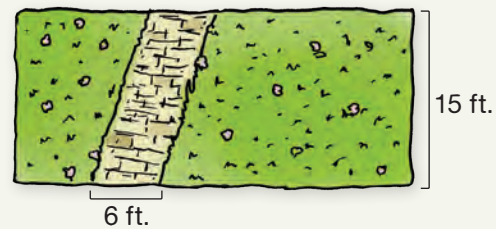
Area: _____ units²

Solve. Write the equations you use.

The tile is shaped like a parallelogram. What is its area?



★ The path is shaped like a parallelogram. What is its area?



Review 

Write each number in expanded form.

Standard Form	Expanded Form
1.671	$1 + \frac{6}{10} + \frac{7}{100} + \frac{1}{1,000}$
3.945	
2.06	
5.937	

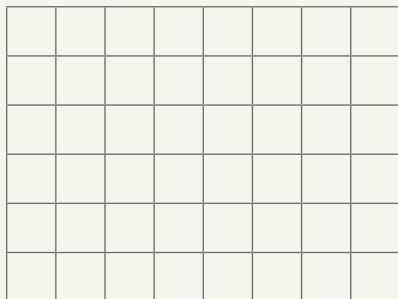
Circle the prime numbers. X the numbers that are not prime.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

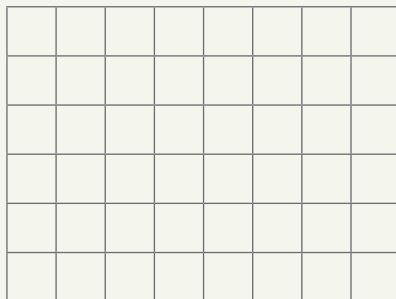
Use mental math to complete.

	400	500	600	700	800	900	1,000	1,100
÷ 2	200							

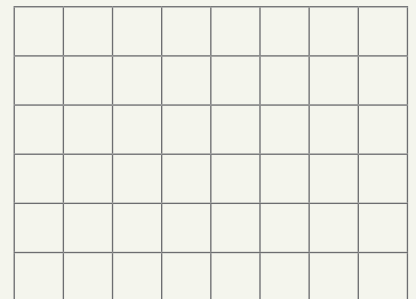
Draw a triangle that matches each description.



Right triangle
(1 right angle)



Obtuse triangle
(1 obtuse angle)



Acute triangle
(3 acute angles)

Lesson Activities

A

- o Salad Dressing
- o - 1 part vinegar
- o - 3 parts olive oil

Vinegar (Tablespoons)	1	2	3	4	5	6
Olive oil (Tablespoons)	3					

B

Use Ratio Tables to Find Equivalent Ratios

Ratios that have the same simplest form are equivalent to each other. To check whether two ratios are equivalent to each other, write each ratio in simplest form.

We can use ratio tables to organize the information in ratio problems. Make sure you write each number in the matching row.






Ex. Audrey used 30 mL of vinegar and 120 mL of olive oil. Jonathan used 25 mL of vinegar and 75 mL of olive oil. Who followed the salad dressing recipe (from part A) correctly?

<p>Audrey</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Vinegar</td> <td style="padding: 5px;">30</td> <td style="padding: 5px;">1</td> </tr> <tr> <td style="padding: 5px;">Olive oil</td> <td style="padding: 5px;">120</td> <td style="padding: 5px;">4</td> </tr> </table> <p style="text-align: center;">$\div 30$</p>	Vinegar	30	1	Olive oil	120	4	<p>Jonathan</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Vinegar</td> <td style="padding: 5px;">25</td> <td style="padding: 5px;">1</td> </tr> <tr> <td style="padding: 5px;">Olive oil</td> <td style="padding: 5px;">75</td> <td style="padding: 5px;">3</td> </tr> </table> <p style="text-align: center;">$\div 25$</p>	Vinegar	25	1	Olive oil	75	3
Vinegar	30	1											
Olive oil	120	4											
Vinegar	25	1											
Olive oil	75	3											

Jonathan's ratio simplifies to 1:3, so he followed the recipe correctly.

C

★ Join Us for Enrichment Classes at the Community Center!

<p>Woodworking for Beginners</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Students</td> <td style="padding: 5px;">18</td> <td style="padding: 5px;"><input type="text"/></td> </tr> <tr> <td style="padding: 5px;">Instructors</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;"><input type="text"/></td> </tr> </table>	Students	18	<input type="text"/>	Instructors	4	<input type="text"/>	<p>Introduction to Pickleball </p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Students</td> <td style="padding: 5px;">40</td> <td style="padding: 5px;"><input type="text"/></td> </tr> <tr> <td style="padding: 5px;">Instructors</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;"><input type="text"/></td> </tr> </table>	Students	40	<input type="text"/>	Instructors	2	<input type="text"/>	<p>Soccer Skills </p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Students</td> <td style="padding: 5px;">32</td> <td style="padding: 5px;"><input type="text"/></td> </tr> <tr> <td style="padding: 5px;">Instructors</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;"><input type="text"/></td> </tr> </table>	Students	32	<input type="text"/>	Instructors	4	<input type="text"/>
Students	18	<input type="text"/>																		
Instructors	4	<input type="text"/>																		
Students	40	<input type="text"/>																		
Instructors	2	<input type="text"/>																		
Students	32	<input type="text"/>																		
Instructors	4	<input type="text"/>																		
<p> Advanced Jazz Band</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Students</td> <td style="padding: 5px;">60</td> <td style="padding: 5px;"><input type="text"/></td> </tr> <tr> <td style="padding: 5px;">Instructors</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;"><input type="text"/></td> </tr> </table>	Students	60	<input type="text"/>	Instructors	3	<input type="text"/>	<p> Beginning Oil Painting</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Students</td> <td style="padding: 5px;">16</td> <td style="padding: 5px;"><input type="text"/></td> </tr> <tr> <td style="padding: 5px;">Instructors</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;"><input type="text"/></td> </tr> </table>	Students	16	<input type="text"/>	Instructors	2	<input type="text"/>	<p> Recreational Scuba Diving</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Students</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;"><input type="text"/></td> </tr> <tr> <td style="padding: 5px;">Instructors</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;"><input type="text"/></td> </tr> </table>	Students	6	<input type="text"/>	Instructors	4	<input type="text"/>
Students	60	<input type="text"/>																		
Instructors	3	<input type="text"/>																		
Students	16	<input type="text"/>																		
Instructors	2	<input type="text"/>																		
Students	6	<input type="text"/>																		
Instructors	4	<input type="text"/>																		

Which class has the same student-instructor ratio as Soccer Skills?

Which class has the same student-instructor ratio as Introduction to Pickleball?

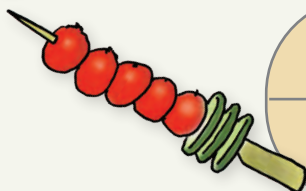
Which class has the most personal attention for each student?

Practice

Use the information to complete the charts.

Carrot-Orange Juice
 - 1 part carrot juice
 - 4 parts orange juice

Carrot juice (fl. oz.)	1	2	3	4	5	6
Orange juice (fl. oz.)	4	8				

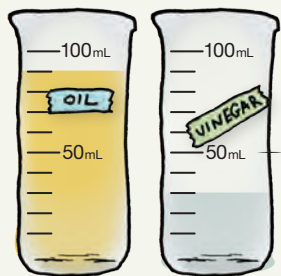


Cherry tomatoes	5	10	15	20	25	30
Cucumber slices	3					

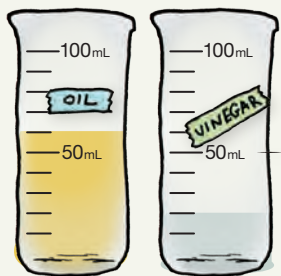
Slime Recipe
 - 2 parts cornstarch
 - 3 parts water

Cornstarch (scoops)	2					
Water (scoops)	3	6	9	12	15	18

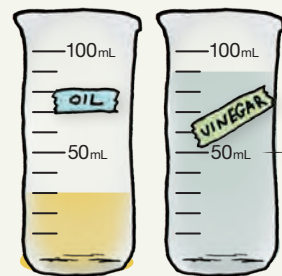
Write the simplest form of each ratio in the ratio tables. Then, circle the two problems with equivalent ratios in each row.



Oil	90	<input type="text"/>
Vinegar	30	<input type="text"/>



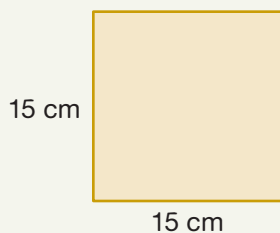
Oil	60	<input type="text"/>
Vinegar	20	<input type="text"/>



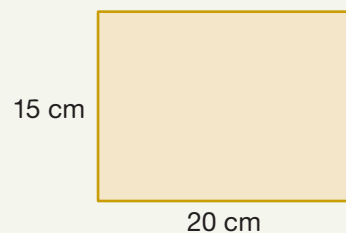
Oil	30	<input type="text"/>
Vinegar	90	<input type="text"/>



Length	12	<input type="text"/>
Width	9	<input type="text"/>



Length	15	<input type="text"/>
Width	15	<input type="text"/>

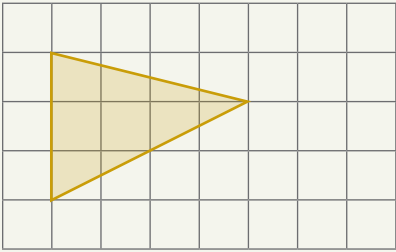


Length	20	<input type="text"/>
Width	15	<input type="text"/>

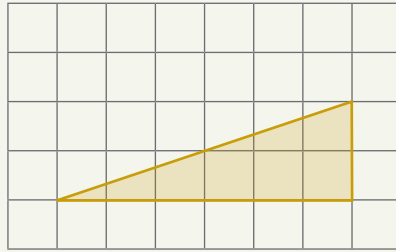
Review



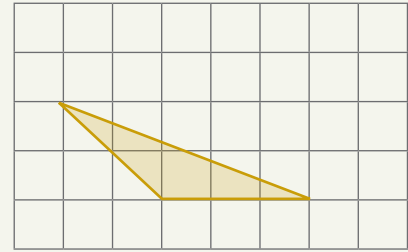
Find the area of each triangle.



Area: _____ sq. units

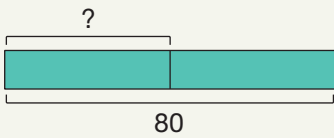


Area: _____ sq. units

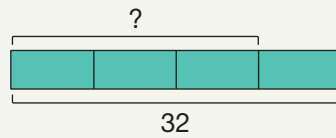


Area: _____ sq. units

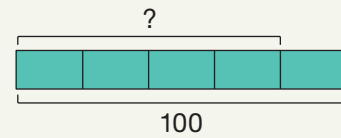
Complete.



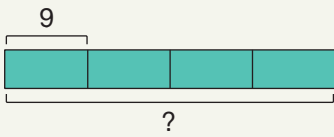
$$\frac{1}{2} \text{ of } 80 = \underline{\hspace{2cm}}$$



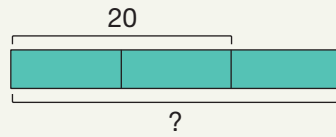
$$\frac{3}{4} \text{ of } 32 = \underline{\hspace{2cm}}$$



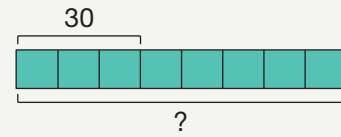
$$\frac{4}{5} \text{ of } 100 = \underline{\hspace{2cm}}$$



$$\frac{1}{4} \text{ of } \underline{\hspace{2cm}} = 9$$



$$\frac{2}{3} \text{ of } \underline{\hspace{2cm}} = 20$$



$$\frac{3}{8} \text{ of } \underline{\hspace{2cm}} = 30$$

Use Beatrice's scorecard from the diving meet to answer the questions.

Which dive earned Beatrice the highest score?

Which dive earned Beatrice the lowest score?

How many more points did Beatrice earn for her second dive than for her first dive?

Dive	Score
1	28.74
2	31.09
3	30.70

How many points did Beatrice earn for all three dives?

Practice 

Rewrite each division problem as a multiplication problem and solve. Write your answers as mixed numbers in simplest form. Then, find the blanks that match the answers. Write the matching letters in the blanks to solve the riddle.

O $1\frac{3}{4} \div \frac{1}{8}$

H $1\frac{3}{4} \div \frac{5}{8}$

A $1\frac{3}{4} \div \frac{7}{8}$

S $2\frac{1}{2} \div \frac{1}{5}$

G $2\frac{1}{2} \div \frac{3}{5}$

I $2\frac{1}{2} \div \frac{4}{5}$

P $4\frac{1}{6} \div \frac{1}{6}$

T $4\frac{1}{6} \div \frac{3}{6}$

N $4\frac{1}{6} \div \frac{5}{6}$

Did you hear about the mathematician who's scared of negative numbers?

She will

$12\frac{1}{2}$ $8\frac{1}{3}$ 14 25 2 $8\frac{1}{3}$

to avoid them.

5 14 $8\frac{1}{3}$ $2\frac{4}{5}$ $3\frac{1}{8}$ 5 $4\frac{1}{6}$



Review

Compare with $<$, $>$, or $=$.

$\frac{1}{4} \bigcirc \frac{1}{3}$

$\frac{1}{5} \bigcirc \frac{1}{8}$

$\frac{8}{9} \bigcirc 1$

$\frac{4}{5} \bigcirc \frac{5}{4}$

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

$\frac{3}{5} \bigcirc \frac{3}{8}$

$\frac{9}{8} \bigcirc 1$

$\frac{8}{3} \bigcirc \frac{3}{8}$

$\frac{3}{4} \bigcirc \frac{3}{3}$

$\frac{5}{5} \bigcirc \frac{8}{8}$

$\frac{9}{9} \bigcirc 1$

$\frac{7}{10} \bigcirc \frac{10}{7}$

Use long division to solve. Write the remainders as fractions.

5	4	3	9	7	3	0	6	8	6	5	6

Complete.

$4 \times 10^3 = \underline{\hspace{2cm}}$

$4 \times 10^1 = \underline{\hspace{2cm}}$

$4 \times 10^4 = \underline{\hspace{2cm}}$

$4 \times 10^2 = \underline{\hspace{2cm}}$

$4 \times 10^0 = \underline{\hspace{2cm}}$

$4 \times 10^6 = \underline{\hspace{2cm}}$

Complete the chart.

100 cm = 1 m	Centimeters	137	201	299	313			
	Meters	$1 \frac{37}{100}$				$3 \frac{51}{100}$	$4 \frac{7}{100}$	$4 \frac{73}{100}$

Draw a bar model to match the problem. Then, answer the questions.

In a bag of candy, the ratio of chocolate candy to fruit-flavored candy is 2:5.

What fraction of the candy is chocolate?

What fraction of the candy is fruit-flavored?



Lesson Activities 

A

$$\frac{1}{2} = \underline{0.5}$$

$$\frac{1}{4} = \underline{\hspace{2cm}}$$

$$\frac{3}{4} = \underline{\hspace{2cm}}$$

$$\frac{1}{5} = \underline{\hspace{2cm}}$$

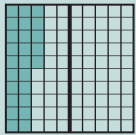
$$\frac{2}{5} = \underline{\hspace{2cm}}$$

$$\frac{3}{5} = \underline{\hspace{2cm}}$$

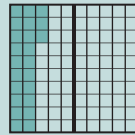
$$\frac{4}{5} = \underline{\hspace{2cm}}$$

B

Use Decimals to Compare

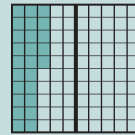
Ex. Which is greater, $\frac{1}{4}$ or 0.23?

$$\frac{1}{4} = 0.25$$

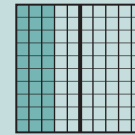


$$0.23$$

0.25 is greater than 0.23, so $\frac{1}{4}$ is greater than 0.23.

Ex. Which is greater, $\frac{1}{4}$ or $\frac{3}{10}$?

$$\frac{1}{4} = 0.25$$



$$\frac{3}{10} = 0.3$$

0.3 is greater than 0.25, so $\frac{3}{10}$ is greater than $\frac{1}{4}$.






$$\frac{1}{2} \bigcirc 0.5001$$

$$\frac{1}{5} \bigcirc 0.19$$

$$\frac{3}{4} \bigcirc \frac{4}{5}$$

C

Hit the Target (2-Player Game)

					
Player 1	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>
Player 2	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>	0. <input type="text"/> <input type="text"/> <input type="text"/>

Practice

Use the digits to complete the blanks and create a decimal number.



$$\frac{4}{10} = 0.\square\square\square$$



$$\frac{4}{100} = 0.\square\square\square$$



$$\frac{4}{1,000} = 0.\square\square\square$$



$$\frac{3}{4} < 0.\square\square\square$$

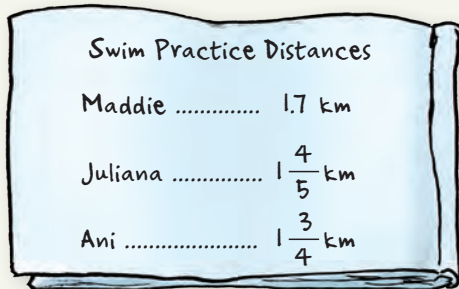


$$\frac{1}{2} > 0.\square\square\square$$



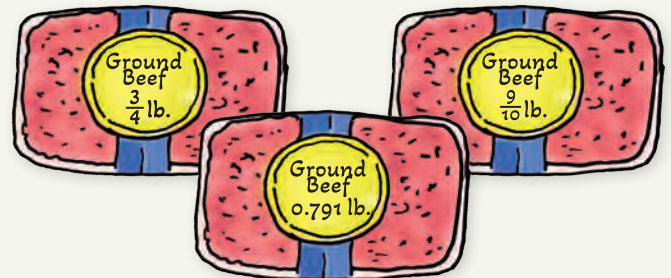
$$\frac{1}{5} > 0.\square\square\square$$

Use the charts and pictures to answer the questions.



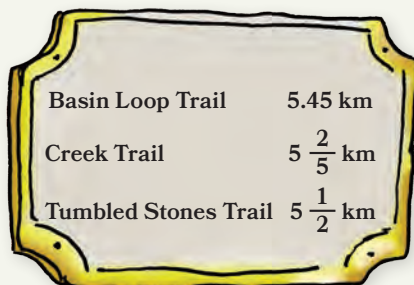
Who swam the farthest distance?

Who swam the shortest distance?



What is the weight of the heaviest package?

What is the weight of the lightest package?



Which trail is the longest?

Which trail is the shortest?



Which bottle has the greatest capacity?

Which bottle has the lowest capacity?

