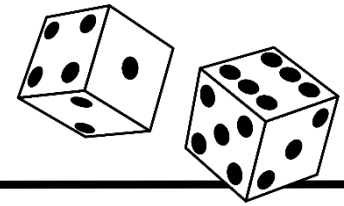
Indiana Academic Standards for Mathematics

Fifth Grade



Plot the following numbers on a number line and then compare all three numbers using >, =, and < symbols.

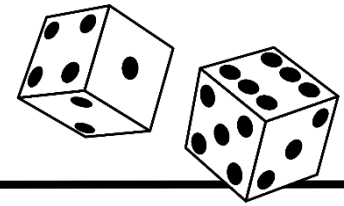
- **3 ¼, 2.75, $\frac{5}{2}$**

5NS.1 Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.

https://www.illustrativemathematics.org/illustrations/1802

Indiana Academic Standards for Mathematics

Fifth Grade



Plot the following numbers on a number line and then compare all three numbers using >, =, and < symbols.

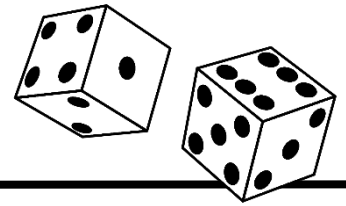
- **2 ¾, 3.25, $\frac{8}{2}$**

5NS.1 Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.

https://www.illustrativemathematics.org/illustrations/1802

Indiana Academic Standards for Mathematics

Fifth Grade



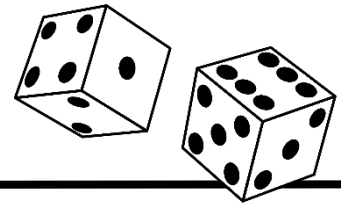
Lou has 4 pieces of red candy and 5 pieces of blue candy. Describe how many pieces are red in terms of the total amount of pieces of candy and represent this as a fraction.

5NS.2 Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

https://www.illustrativemathematics.org/illustrations/858

Indiana Academic Standards for Mathematics

Fifth Grade



a) Mary weighs a marshmallow to be 7.2 grams. How much would you expect 10 marshmallows to weigh? Why?

b) Mary weighs 10 jellybeans to be 12.0 grams. How much would you expect 1 jellybean to weigh? Why?

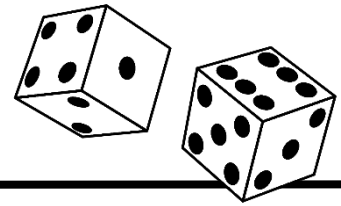
c) Mary weighs 10 erasers to be 312.4 grams. How much would you expect 1,000 erasers to weigh? Why?

5NS.3 Recognize the relationship that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right, and inversely, a digit in one place represents 1/10 of what it represents in the place to its left.

https://learnzillion.com/ lessons

Indiana Academic Standards for Mathematics

Fifth Grade



a) Evaluate each expression and describe any patterns that you notice.

5×10^1 5×10^2 5×10^3 5×10^4

b) Evaluate each expression and describe any patterns that you notice.

26.34×10^1 26.34×10^2 26.34×10^3

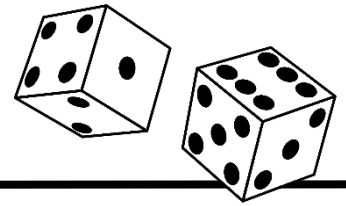
$26.34 ^{y} 10^1$ 26.34×10^2 26.34×10^3

5NS.4 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.

https://learnzillion.com/ lessons

Indiana Academic Standards for Mathematics

Fifth Grade



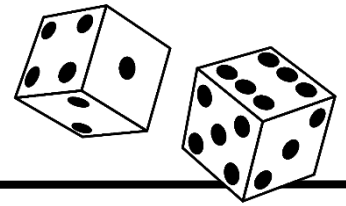
a) What is 562.847 rounded to the nearest hundredth? tenth? one? ten? hundred?

5NS.5 Use place value understanding to round decimal numbers up to thousandths to any given place value

https://www.illustrativemathematics.org/illustrations/1804

Indiana Academic Standards for Mathematics

Fifth Grade



a) Erin has 75% of all the pens in her home. Draw a picture to represent 75%.

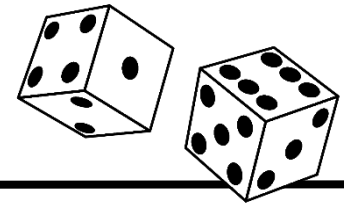
b) If the total number of pens in Erin's home is 100, how many pens does Erin have?

5NS.6 Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).

http://www.ixl.com/math/grade-5/what-percentage-is-illustrated

Indiana Academic Standards for Mathematics

Fifth Grade



a) Evaluate each expression.

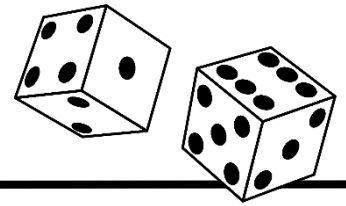
- **46 x 283**
- **3,561 x 87**

5C.1 Multiply multi-digit whole numbers fluently using a standard algorithmic approach.

https://www.illustrativemathematics.org/illustrations/1812

Indiana Academic Standards for Mathematics

Fifth Grade



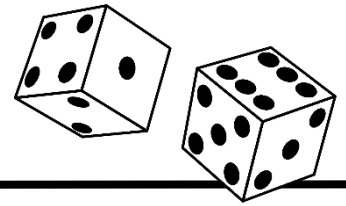
a) What is 2,072 ÷ 37?
b) What is 3,912 ÷ 48?
c) Describe how you determined your answer.

5C.2 Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning used.

http://www.ixl.com/math /grade-5/divide-by-2- digit-numbers-wordproblems

Indiana Academic Standards for Mathematics

Fifth Grade



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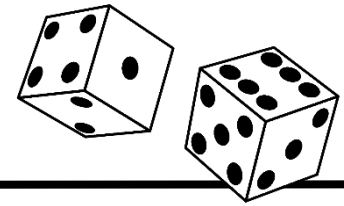
Indiana Academic Standards for Mathematics

Fifth Grade



a) Determine which number is greater in each expression without multiplying and explain how you know.

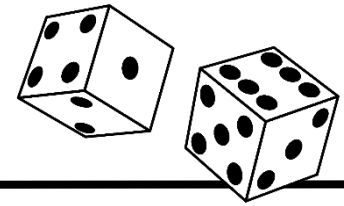
- **99 or ¼ x 99**
- **$\frac{51}{100}$ or $\frac{51}{100}$ x 301**
- **$\frac{13}{40}$ or $\frac{2}{3}$ x $\frac{13}{40}$**

5C.3 Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

https://www.illustrativemathematics.org/illustrations/151

Indiana Academic Standards for Mathematics

Fifth Grade



a) Fill in the blank to complete this sentence. When multiplying 3 by ½, the product will be _____ the size of 3.

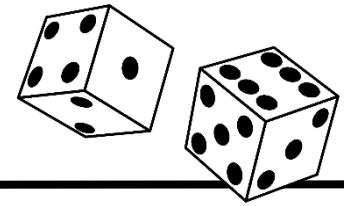
b) Fill in the blank to complete this sentence. When multiplying 40 by 5 1/9, the product will be slightly more than ___ times the size of 40.

5C.3 Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

https://www.illustrativemathematics.org/illustrations/151

Indiana Academic Standards for Mathematics

Fifth Grade



a) Evaluate each expression.

- **16 7/9 – 10 1/3**

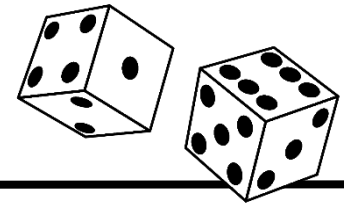
- **7/8 + 2/5**

5C.4 Add and subtract fractions with unlike denominators, including mixed numbers.

http://www.ixl.com/math/grade-5/add-and-subtract-fractions

Indiana Academic Standards for Mathematics

Fifth Grade



a) What is 1/8 x 4/5? Represent this product using a visual fraction model.

b) What is 7 x 3/4? Represent this product using a visual fraction model.

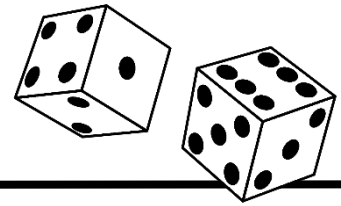
c) Evaluate: 2/5 x 6

5C.5 Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

https://www.illustrativemathematics.org/illustrations/321

Indiana Academic Standards for Mathematics

Fifth Grade



a) Will the product of each expression be greater or smaller than 100?

100 x ½ **100 x ¼** **100 x 1/10** **100 x 3/2**

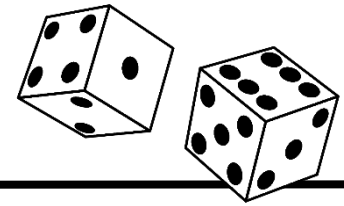
b) Explain how to determine if the product of a whole number and a fraction will be greater or smaller than the given whole number.

5C.6 Explain why multiplying a number by a fraction greater than 1 results in a product greater than the given number. Explain why multiplying a number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence, a/b = (n × a)/(n × b), to the effect of multiplying a/b by 1.

https://www.illustrativemathematics.org/illustrations/49

Indiana Academic Standards for Mathematics

Fifth Grade



a) Evaluate each expression.

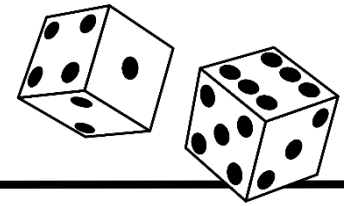
- **8 ÷ ⅓**
- **⅕ ÷ 9**

5C.7 Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.

https://www.illustrativemathematics.org/illustrations/958

Indiana Academic Standards for Mathematics

Fifth Grade



a) Evaluate each expression.

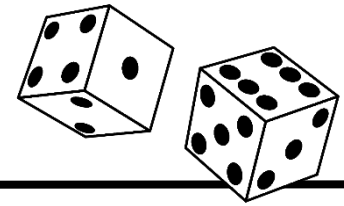
- **459.28 + 97.06**
- **5078.07 – 1461.3**
- **1.3 x 5.4**
- **52 ÷ 6.5**

5C.8 Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

http://www.ixl.com/math/grade-5/add-and-subtract-decimals-word-problems

Indiana Academic Standards for Mathematics

Fifth Grade



a) Evaluate: **2 x (3+5) x 4 x2**

b) Are the expressions below equivalent? Justify your answer.

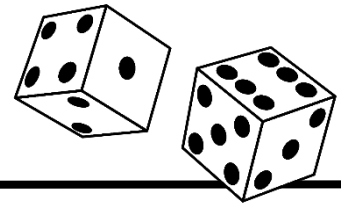
- **3 x 5x (2 + 4)**
- **3 x (5x2 + 4)**
- **3 x 5x2 + 4**

5C.9 Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.

https://www.illustrativemathematics.org/illustrations/555

Indiana Academic Standards for Mathematics

Fifth Grade



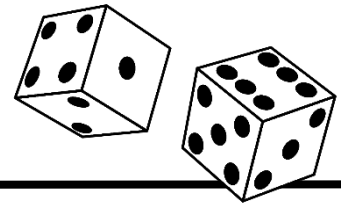
a) Sarah wants to buy calculators for some of her friends. The calculators cost $8 each. She has $140 to spend on the calculators. For how many friends can Sarah buy a calculator?

5AT.1 Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.

https://www.illustrativemathematics.org/illustrations/1289

Indiana Academic Standards for Mathematics

Fifth Grade



a) What is the smallest number of busses that can carry 250 students if each bus holds 36 students?

5AT.1 Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.

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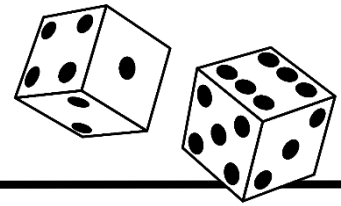
Indiana Academic Standards for Mathematics

Fifth Grade



a) A teacher wants to distribute 250 pencils evenly to 36 students. What is the largest number of pencils each student will receive? Explain how you determined your answer.

5AT.1 Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.

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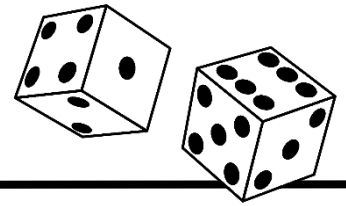
Fifth Grade



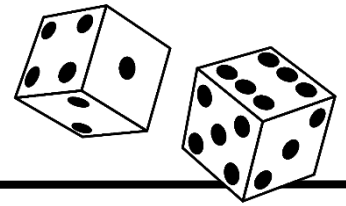
a) Of the ice cream bars sold at a shop yesterday, ¾ were chocolate and ⅕ were vanilla. What fraction of ice cream bars sold yesterday was either chocolate or vanilla?

5AT.2 Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

https://www.illustrativemathematics.org/illustrations/481

Indiana Academic Standards for Mathematics

Fifth Grade



a) Nick's goal is to run 12 miles each week. Nick runs 2 ⅗ miles on Monday. How many more miles does Nick need to run this week to reach his goal?

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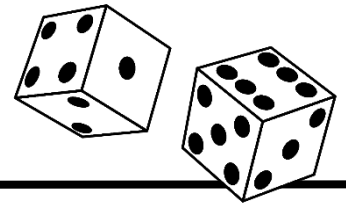
https://www.illustrativemathematics.org/illustrations/481

Indiana Academic Standards for Mathematics

Fifth Grade



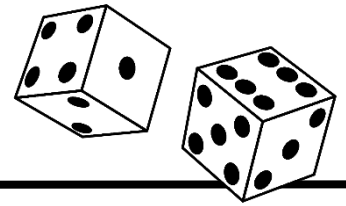
a) Tony buys 18 roses for his mom. ⅚ of them are pink. How many of the roses are pink?

5AT.3 Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).

https://www.illustrativemathematics.org/illustrations/297

Indiana Academic Standards for Mathematics

Fifth Grade



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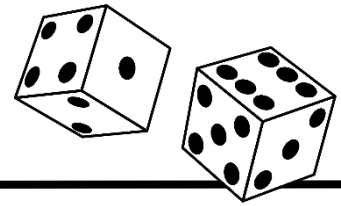
https://www.illustrativemathematics.org/illustrations/297

Indiana Academic Standards for Mathematics

Fifth Grade



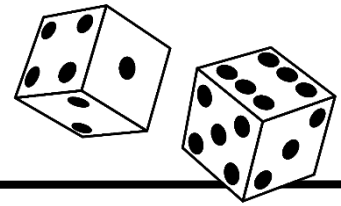
a) Ray exercised for ⅔ hour last weekend. Betty exercised 3 ¾ times as long as Ray last weekend. How many hours did Betty exercise last weekend?

5AT.3 Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).

https://www.illustrativemathematics.org/illustrations/297

Indiana Academic Standards for Mathematics

Fifth Grade



a) How many cup servings are in 4 cups of oats?

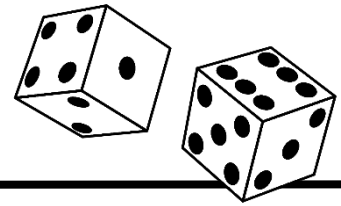
b) After Cam's party, he had ⅕ of a large sheet cake left over. He divided it evenly for 3 of his friends to take home. What fractional amount of the cake did each friend take home?

5AT.4 Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).

https://www.illustrativemathematics.org/illustrations/1172

Indiana Academic Standards for Mathematics

Fifth Grade



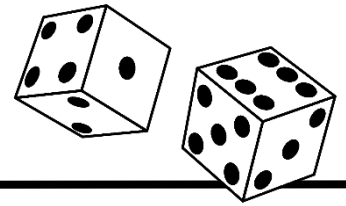
a) Regan buys 3 shirts for a total cost of $58.50. Each shirt costs the same amount. What is the cost of each shirt?

5AT.5 Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations to represent the problem).

http://www.ixl.com/math/grade-5/add-and-subtract-money-word-problems

Indiana Academic Standards for Mathematics

Fifth Grade



a) Lee buys a pair of jeans for $16.50 and 3 ties for $9.25 each. What is the total cost of Lee's purchase?

5AT.5 Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations to represent the problem).

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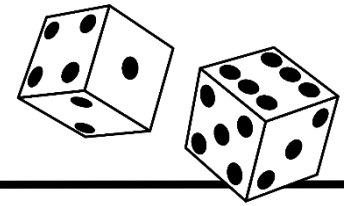


Graph the points below on a coordinate plane.

(1, 4), (3, 0), (0, 5), (5, 4)

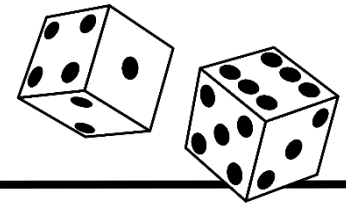
Describe how to graph points, such as these, in the coordinate plane.

5AT.6 Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

http://www.ixl.com/math/grade-5/coordinate-graphs-review-whole-numbers-only

Indiana Academic Standards for Mathematics

Fifth Grade



a) Complete the table of values for the equation $y = x + 3$ and graph the ordered pairs in the coordinate plane.

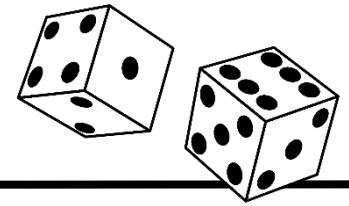
x	y
0	
2	
4	
6	

5AT.7 Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

http://www.ixl.com/math/grade-5/graph-linear-functions

Indiana Academic Standards for Mathematics

Fifth Grade



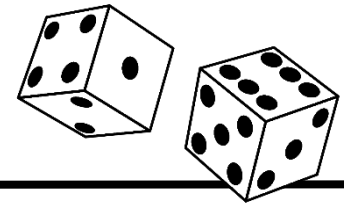
a) Ed created a map of his neighborhood on a coordinate plane. His home is located at (2, 3). His school is located 1 unit to the left and 5 units up from his home. What are the coordinates of the school?

5AT.7 Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

http://www.ixl.com/math/grade-5/graph-linear-functions

Indiana Academic Standards for Mathematics

Fifth Grade



Gary is buying calculators and notebooks for his class. Each calculator costs $7 and each notebook costs $2. Gary is not sure how many calculators and notebooks he will buy.

- Write an expression to represent the total cost of Gary's purchase. Be sure to define your variables.
- How much will it cost if Gary buys 12 calculators and 25 notebooks?

5AT.8 Define and use up to two variables to write linear expressions that arise from realworld problems, and evaluate them for given values.

http://www.ixl.com/math/grade-5/write-equations-to-represent-word-problems

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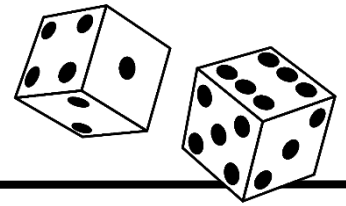

a) Draw a right, acute, and obtuse triangle. Describe how the triangles are similar and different.

b) Draw a circle with a diameter of 6 inches. Explain the steps you took to draw the circle.

5G.1 Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter

http://www.ixl.com/math/grade-5/types-oftriangles

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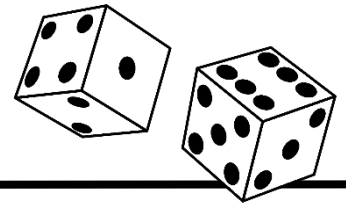

Consider the characteristics of a square and equilateral triangle. How are they similar? How are they different?

5G.2 Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.

https://www.illustrativemathematics.org/illustrations/1505

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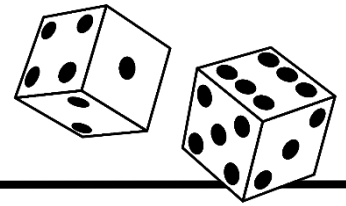

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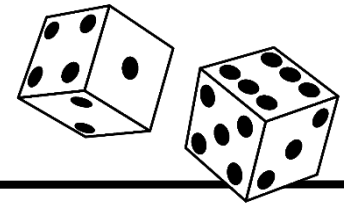

a) Henry made 5 gallons of fruit punch. How many servings will this make if each serving is one cup?

b) An adult elephant at a zoo weighs 4,200 kilograms. A baby elephant at the zoo weighs 105,000 grams. How many kilograms combined do they weigh?

5M.1 Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.

https://www.illustrativemathematics.org/illustrations/293

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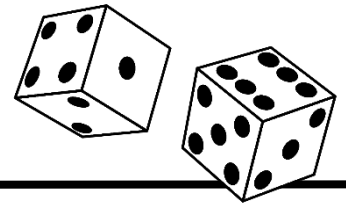
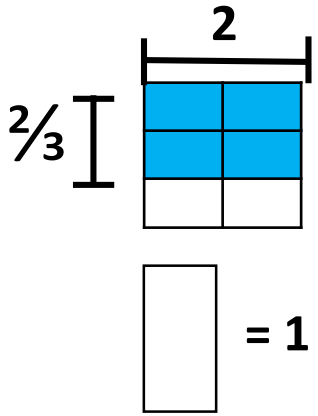


a) The model below can be used to represent the area of a rectangle measuring 2 feet by ⅔ foot. What is the area of the rectangle?



5M.2 Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

http://www.ixl.com/math/grade-3/area-of-figures-made-of-unit-squares

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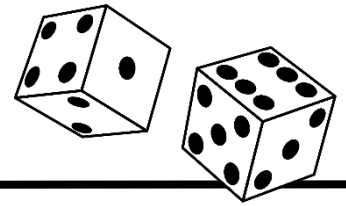

a) What is the area of a rectangle with length inches and width inches?

5M.2 Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

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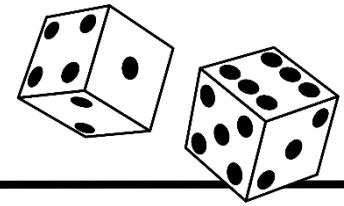
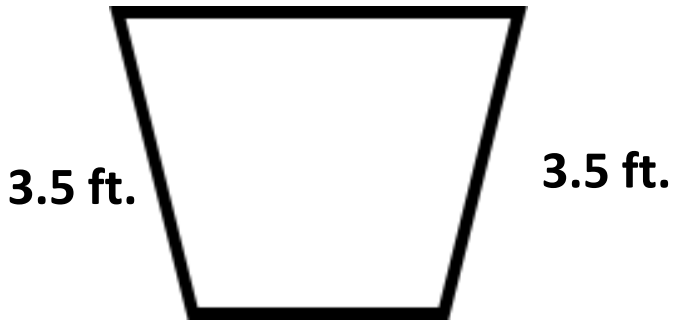


Jim designs a sign in the shape of a trapezoid as shown below. The height of the trapezoid is 3 feet. What is the area and perimeter of the sign?



5M.3 Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.

http://www.ixl.com/math/grade-5/area-of-parallelograms-and-trapezoids

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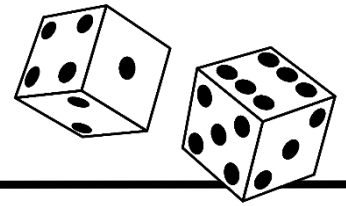

Activity: Give students 24 unit cubes and have them make as many rectangular prisms as possible. They should record the types of prisms in a chart like the one below. Ask if they notice how the dimensions relate to the volume.

Length	Width	Height	Volume
1	2	12	24
2	2	6	24
4	2	3	24
8	3	1	24

5M.4 Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths or multiplying the height by the area of the base.

http://www.ixl.com/math/grade-3/volume

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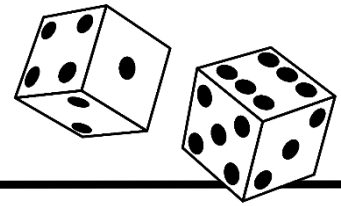

Peter has a fish tank in the shape of a rectangular prism with dimensions 4 feet by 3 feet by 2 feet. How much water will completely fill the tank?

5M.5 Apply the formulas V = l × w × h and V = B × h for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems.

https://www.illustrativemathematics.org/illustrations/1308

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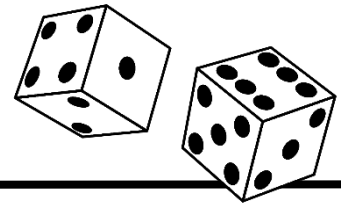

a) What is the volume, in cubic units, of the figure?

5M.6 Find volumes of solid figures composed of two nonoverlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.

https://learnzillion.com/lessons

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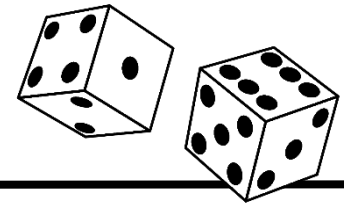
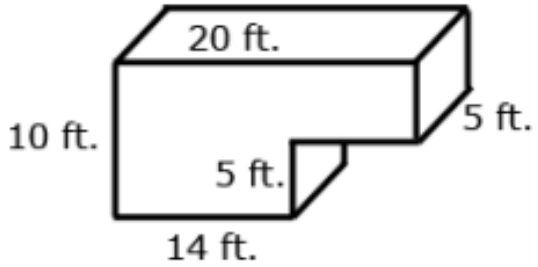


a) Raul has a swimming pool as shown in the diagram. The pool is ⅘ full of water. How much water is in the pool?



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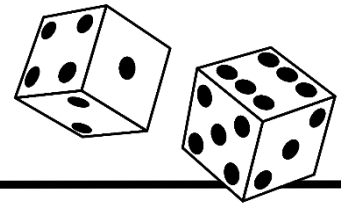

a) Wendy asked each student in her class to answer the questions below. Which questions will generate responses that can be represented as categorical data? as numerical data? Explain how you know.

- What is your favorite color?
- How many pets do you have?
- What is your favorite type of music?
- What is your favorite food?
- How tall are you?

5DS.1 Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.

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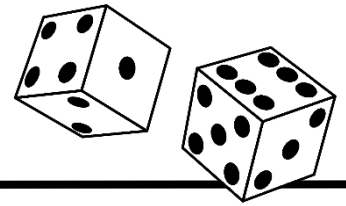

a) Activity: Students can formulate a statistical question of interest and conduct an observation, survey, or experiment. They can collect, organize, and display their data, and make observations based on their data display. (Examples: conduct a survey about favorite sport, food, etc.; observe and tally the different colors of shirts classmates wear to school on a given day.)

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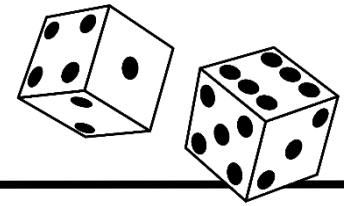

a) Abe records his test scores, as percentages, in his science class as shown below. What is the mean, median, and mode of his test scores?

85, 88, 75, 90, 85

5DS.2 Understand and use measures of center (mean and median) and frequency (mode) to describe a data set.

https://learnzillion.com/lessons