

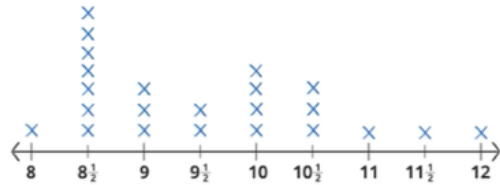
5th Grade Mission 4 Notes

Most frequent or common measurement- means the measurement (number) that has the most x's

Smallest (least) measurement- means the smallest number on the line plot where the first measurement begins (x).

Largest (most) measurement- means the largest number on the line plot where the last measurement ends (x).

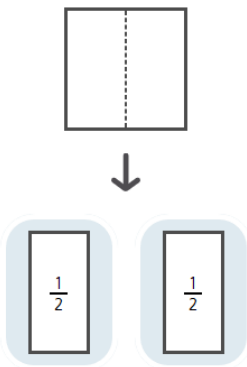
Remember $\frac{1}{2} = \frac{2}{4}$



Length of Feet at Zearn (inches)			
11 ✓	10 1/2 ✓	11 1/2 ✓	8 1/2 ✓
10 1/2 ✓	9 1/2 ✓	10 ✓	10 ✓
10 ✓	10 ✓	12 ✓	10 1/2 ✓
8 1/2 ✓	9 ✓	9 ✓	8 1/2 ✓
10 ✓	8 1/2 ✓	9 1/2 ✓	8 1/2 ✓
8 1/2 ✓	8 ✓	8 1/2 ✓	9 ✓

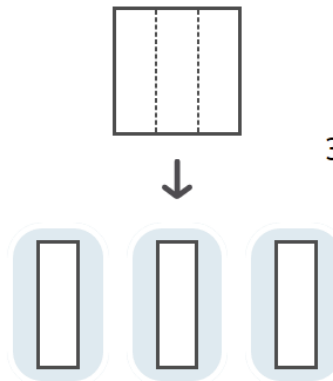
1 foot = 12 inches

When plotting data from a chart to the line plot, be sure to check off each number so you don't put it on the line plot multiple times.



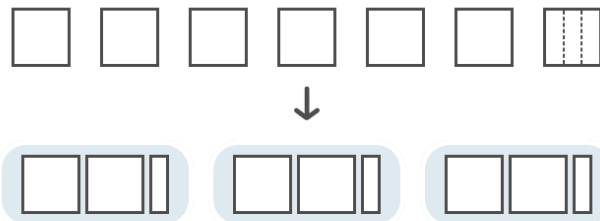
$$1 \div 2 = \frac{1}{2}$$

$$2 \text{ halves} \div 2 = 1 \text{ half}$$



$$1 \div 3 = \frac{1}{3}$$

$$3 \text{ thirds} \div 3 = 1 \text{ third}$$



$$7 \div 3 = \frac{7}{3}$$

Each student gets $2 \frac{1}{3}$ granola bars.

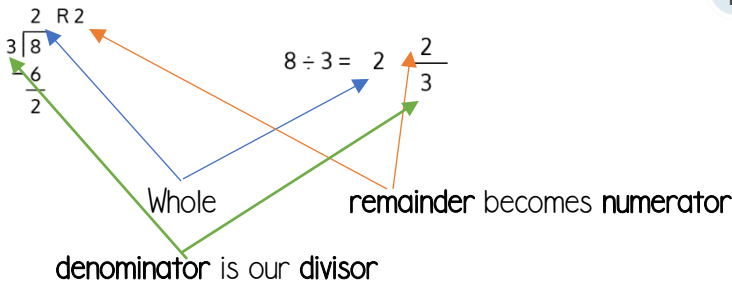
A baker poured 8 kilograms of oats equally into 3 bags.



What is the weight of each bag of oats? 🗣️



Each bag gets $2 \frac{2}{3}$ kilograms



$$\frac{1}{3} \text{ of } 6 = 2 \quad \frac{2}{3} \text{ of } 6 = 4$$

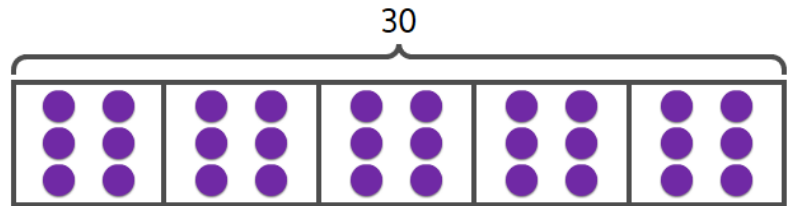
$$\frac{3}{3} \text{ of } 6 = 6 \quad \frac{4}{3} \text{ of } 6 = 8$$

$$\frac{1}{6} \text{ of } 12 = 2$$

$$\frac{1}{2} \text{ of } 12 = 6$$

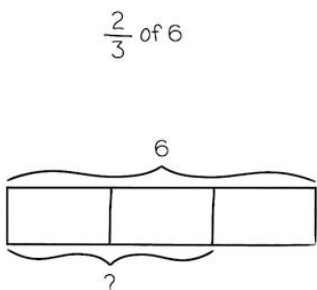
A dozen = 12

Division expression	Unit form	Fraction	Mixed number
$7 \div 4$	28 fourths \div 4 = 7 fourths	$\frac{7}{4}$	$1 \frac{3}{4}$



$$\frac{3}{5} \text{ of } 30 = 18$$

30 is the whole, you are dividing it into 5 units (the denominator). There will be 6 in each unit. To find out $\frac{3}{5}$ of 30, you count how many circles are in 3 total units.



$$\begin{aligned} 3 \text{ units} &= 6 \\ 1 \text{ unit} &= \frac{6}{3} \\ 2 \text{ units} &= 2 \times \frac{6}{3} \\ &= \frac{6}{3} + \frac{6}{3} \\ &= \frac{6+6}{3} \\ &= \frac{2 \times 6}{3} \\ &= \frac{12}{3} \\ &= 4 \end{aligned}$$

OR

$$\begin{aligned} 6 \times \frac{2}{3} \\ &= \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} \\ &= \frac{2+2+2+2+2+2}{3} \\ &= \frac{6 \times 2}{3} \\ &= \frac{12}{3} \\ &= 4 \end{aligned}$$

OR

$$\begin{aligned} \frac{2}{3} \times 6 &= \frac{2 \times \cancel{6}^2}{\cancel{3}_1} \\ &= \frac{2 \times 2}{1} \\ &= 4 \end{aligned}$$

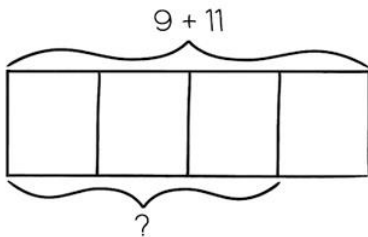
1 pound (lb) = 16 ounces (oz)

1 foot (ft) = 12 inches (in)

$$\begin{aligned} \frac{1}{4} \text{ lb} &= \frac{1}{4} \times 1 \text{ lb} \\ &= \frac{1}{4} \times 16 \text{ oz} \\ &= \frac{16}{4} \text{ oz} \end{aligned}$$

$$\frac{1}{4} \text{ lb} = 4 \text{ oz}$$

$$\begin{aligned} \frac{3}{4} \text{ ft} &= \frac{3}{4} \times 1 \text{ ft} \\ &= \frac{3}{4} \times 12 \text{ in} \\ &= \frac{3 \times \cancel{12}^3}{\cancel{4}^1} \text{ in} \\ &= \frac{3 \times 3}{1} \text{ in} \\ \frac{3}{4} \text{ ft} &= 9 \text{ in} \end{aligned}$$



? = 3 fourths of the sum of 9 and 11

$$\begin{aligned} &= \frac{3}{4} \times (9 + 11) \\ &= \frac{3}{4} \times 20 \\ &= \frac{3 \times \cancel{20}^5}{\cancel{4}^1} \\ &= 15 \end{aligned}$$

$$\frac{1}{3} \times 23 - 5$$

5 less than 1 third of 23

The product of 4 and 2, divided by 3

$$\begin{aligned} &4 \times 2 \div 3 \\ &= 8 \div 3 \\ &= \frac{8}{3} \\ &= 2 \frac{2}{3} \end{aligned}$$

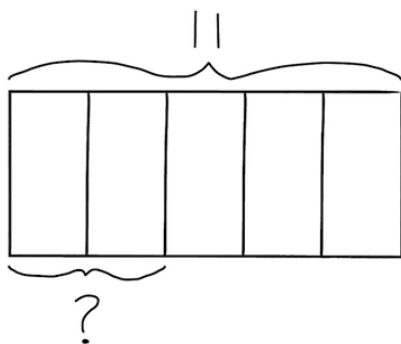
Add- find the sum

Subtract- find the difference

Multiply- find the product

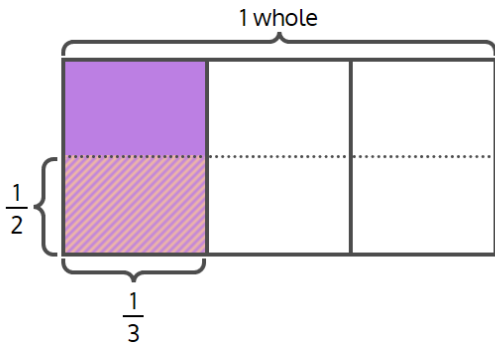
Divide- find the quotient

What is $\frac{2}{5}$ of 11?



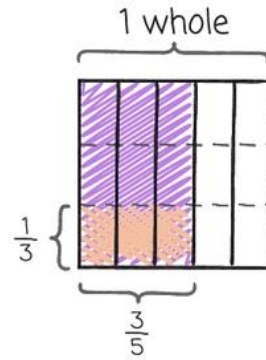
$$\begin{aligned} 5 \text{ units} &= 11 \\ 1 \text{ unit} &= \frac{11}{5} \\ 2 \text{ units} &= \frac{11}{5} + \frac{11}{5} \\ &= \frac{22}{5} \\ &= 4 \frac{2}{5} \end{aligned}$$

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



$$\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$$

What is $\frac{1}{3}$ of $\frac{3}{5}$?



$$\begin{aligned} \frac{1}{3} \times \frac{3}{5} &= \frac{1}{\cancel{3}^1} \times \frac{\cancel{3}^1}{5} \\ &= \frac{1}{5} \end{aligned}$$

$$\frac{7}{9} \times \frac{3}{7}$$

$$= \frac{\cancel{7}^1 \times \cancel{3}^1}{\cancel{9}^3 \times \cancel{7}^1}$$

Simplify the fractions when you can by finding the least common factors

$$= \frac{1 \times 1}{3 \times 1}$$

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

Multiplying fractions:

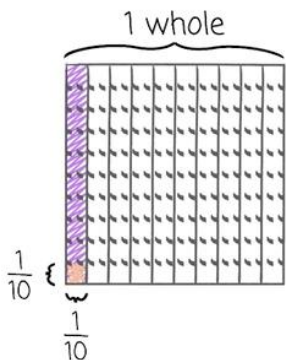
1. DRAW A MODEL of fraction 2
2. Add first fraction to Model
3. SHADE PARTS THAT OVERLAP

Multiplication Method: $\frac{1}{3} \times \frac{3}{5} = \frac{1 \times 3}{3 \times 5} = \frac{\cancel{3}^1 \times 1}{\cancel{3}^1 \times 5} = \frac{1}{5}$

Handwritten notes: "of" means multiply! (pointing to the fraction), "SHADE BOTH TIMES" (pointing to the overlapping area), "TOTAL PARTS" (pointing to the denominator).

$$0.1 \times 0.1 = 0.01$$

$$\frac{1}{10} \times \frac{1}{10} = \frac{1}{100}$$



$$0.7 \times 0.2$$

$$= \frac{7}{10} \times \frac{2}{10}$$

$$= \frac{7 \times 2}{10 \times 10}$$

$$= \frac{14}{100}$$

$$= 0.14$$

Steps to Multiply Decimal by Decimal (fractions):

Step 1: Change the decimals into fractions.

$$0.5 \times 0.7 = \frac{5}{10} \times \frac{7}{10} =$$

Step 2: Multiply the numerators. Then, multiply the denominators.

$$\begin{array}{c} \text{Numerators} \swarrow \searrow \\ \frac{5}{10} \times \frac{7}{10} = \frac{35}{100} \\ \swarrow \searrow \\ \text{Denominators} \end{array}$$

Step 3: Convert fraction to decimal.

* thousandths - 3 digits behind decimal point.

* hundredths - 2 digits behind decimal point

* tenths - 1 digit behind decimal point

$$\frac{35}{100} = 0.35$$

Steps to Multiply Decimal by Decimal:

Step 1: Change the decimals into unit forms.

$$3.2 \times 2.1 = \quad 32 \text{ tenths} \times 21 \text{ tenths} =$$

Step 2: Set up standard algorithm vertically putting the longest number on top.

$$\begin{array}{r} 32 \text{ tenths} \\ \times 21 \text{ tenths} \\ \hline \end{array}$$

Step 3: Find the product.

$$\begin{array}{r} 32 \text{ tenths} \\ \times 21 \text{ tenths} \\ \hline 32 \text{ tenths} \\ +640 \text{ hundredths} \\ \hline 672 \text{ hundredths} \end{array}$$

Step 4: Put the decimal back in answer based on your unit.

* thousandths - 3 digits behind decimal point.

* hundredths - 2 digits behind decimal point

* tenths- 1 digit behind decimal point

$$672 \text{ hundredths} = 6.72$$

Ones x tenths = tenths

Tenths x tenths = hundredths

Tenths x hundredths = thousandths

$$3.2 \times 0.44 = \frac{32}{10} \times \frac{44}{100} = \frac{1,408}{1,000}$$

$$\begin{array}{r} 32 \text{ tenths} \\ \times 44 \text{ hundredths} \\ \hline 128 \\ + 1,280 \\ \hline 1,408 \text{ thousandths} \end{array}$$

$$= 1.408$$

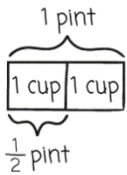
Meters are larger than centimeters.

$$1 \text{ cm} = \frac{1}{100} \text{ m}$$

$$1 \text{ ft} = \frac{1}{3} \text{ yd}$$

$$2 \text{ cups} = 1 \text{ pint}$$

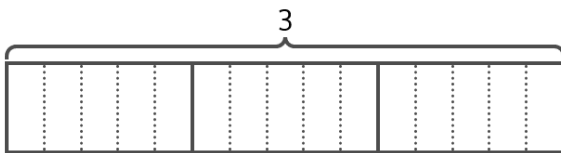
$$\begin{aligned} 3 \frac{1}{2} \text{ cups} &= 3 \frac{1}{2} \times 1 \text{ cup} \\ &= 3 \frac{1}{2} \times \frac{1}{2} \text{ pint} \\ &= \frac{7}{2} \times \frac{1}{2} \text{ pint} \\ &= \frac{7}{4} \text{ pints} \\ &= 1 \frac{3}{4} \text{ pints} \end{aligned}$$



$$1 \text{ in} = \frac{1}{12} \text{ ft}$$

$$\begin{aligned} 15 \text{ in} &= 15 \times 1 \text{ in} \\ &= 15 \times \frac{1}{12} \text{ ft} \\ &= \frac{15}{12} \text{ ft} \\ &= 1 \frac{3}{12} \text{ ft} \end{aligned}$$

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



$$3 \div \frac{1}{5} = 15$$

There are 5 fifths in 1 whole.

There are 15 fifths in 3 wholes.

Dividing Fractions

Whole # by a unit fraction

$3 \div \frac{1}{3}$

I need to divide three wholes into thirds.

There are 9 thirds in 3 wholes.

$$3 \times 3 = 9$$

Unit fraction by a whole #

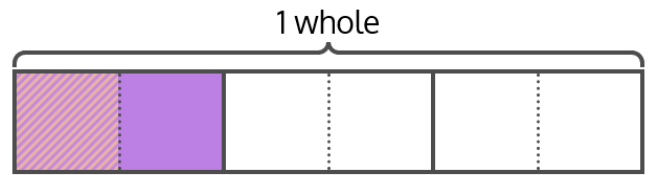
$$\frac{1}{3} \div 3 = \frac{1}{9}$$

$\frac{1}{3} \div 3$ is the same as $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

Algorithm

Keep Change Flip

$$\frac{3}{1} \div \frac{1}{9}$$

$$\frac{3}{1} \times \frac{9}{1} = \frac{27}{1} = 27$$


$$2 \text{ sixths} \div 2 = 1 \text{ sixth}$$

$$\frac{1}{3} \div 2 = \frac{1}{6}$$

$$\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$$

There are 10 tenths in 1 whole.
There are 70 tenths in 7 wholes.

7 is $\frac{1}{10}$ of 70

$$7.4 \div 0.1 = 7.4 \div \frac{1}{10} = 74$$

There are 70 tenths in 7 wholes.
There are 4 tenths in 4 tenths.
There are 74 tenths in 7.4.

There are 62 tenths in 6.2.
6.2 is $\frac{1}{10}$ of 62.

$$6.2 \div 0.1 = 6.2 \div \frac{1}{10} = 62$$

Steps to dividing decimal by decimal

$$3.69 \div 0.3 =$$

Step 1: Write the division expression as a fraction.

$$\frac{3.69}{0.3}$$

Step 2: Multiply to remove the decimal from the denominator.

$$\frac{3.69}{0.3} \times \frac{10}{10} = \frac{36.9}{3}$$

Step 3: Divide using the standard algorithm.

$$\begin{array}{r} 12.3 \\ 3 \overline{)36.9} \\ \underline{-3} \\ 06 \\ \underline{-6} \\ 09 \\ \underline{-9} \\ 0 \end{array}$$

$$7.36 \div 0.08 = \frac{736}{0.08}$$

$$= \frac{736}{0.08} \times \frac{100}{100}$$

$$= \frac{736}{8} \approx 720 \div 8 = 90$$

$$\begin{array}{r} 92 \\ 8 \overline{)736} \\ \underline{-72} \\ 16 \\ \underline{-16} \\ 0 \end{array}$$