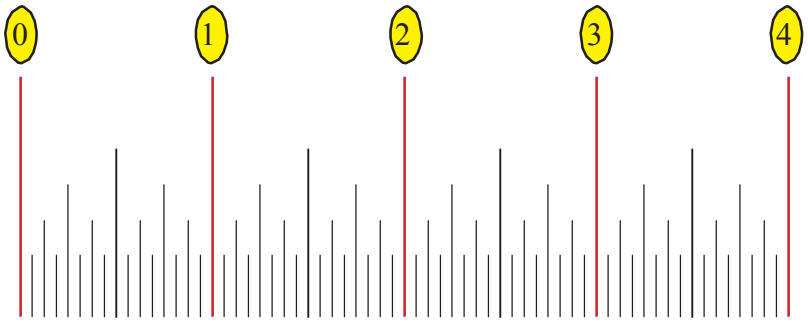
Math Formulas



Carefully examine the sample ruler above and answer the following questions.

1. On the ruler sample shown each division line indicates $^{1}/_{16}$". This means there are 16 divisions in 1". How many $^{1}/_{16}$" divisions are there in 3 inches?

2. On the ruler above there are also $^{1}/_{8}$" divisions. How many $^{1}/_{8}$" divisions are there in 3 inches?

3. How many $^{1}/_{16}$" divisions are there in $^{1}/_{4}$"?

4. How many $^{1}/_{16}$" divisions are there in $^{3}/_{8}$"?

5. How many $^{1}/_{16}$" divisions are there in $^{7}/_{8}$"?

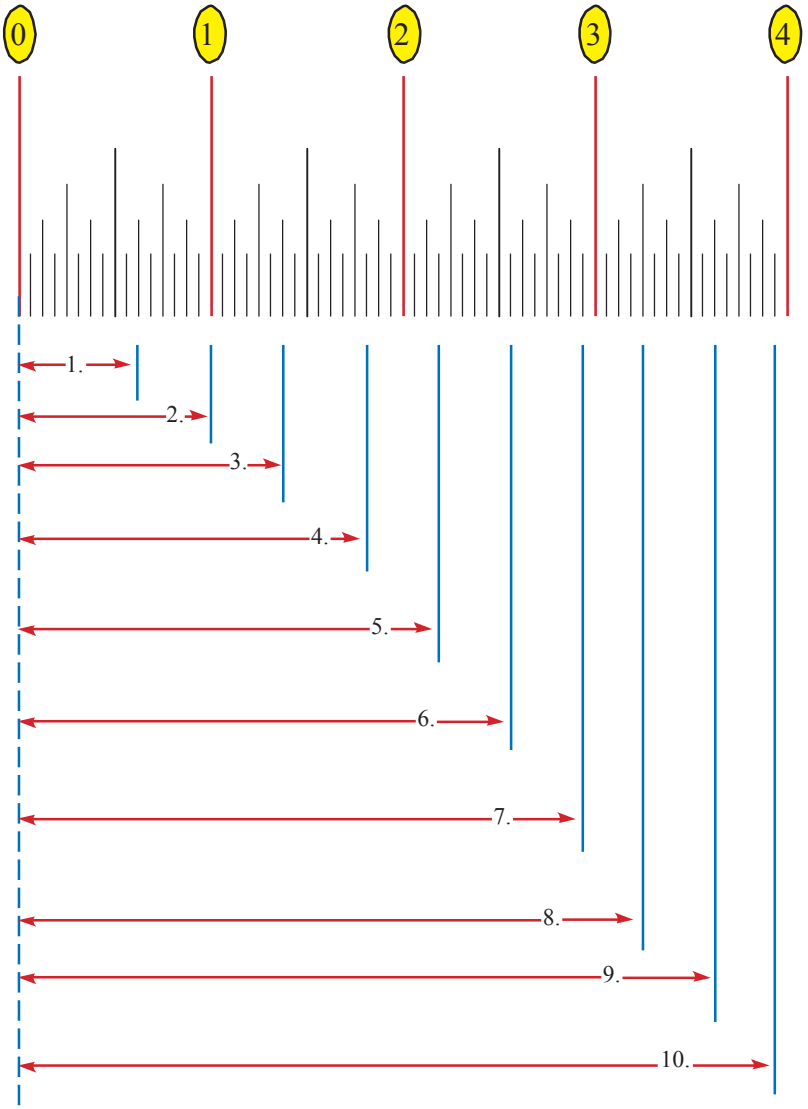
6. How many $^{1}/_{8}$" divisions are there in $^{3}/_{4}$"?

7. How many $^{1}/_{8}$" divisions are there in $^{1}/_{4}$"?

8. How many $^{1}/_{8}$"divisions are there in $1\,^{1}/_{2}$"?

9. How many $^{1}/_{8}$" divisions are there in $2\,^{1}/_{2}$"?

10. How many $^{1}/_{4}$" divisions are there in $3\,^{3}/_{4}$"?



Give the proper inch scale readings for the measurements indicated.

Math FOrMulas

Fractions & Decimals

1. Conversion of a fraction to a decimal:

Numerator divided by denominator, (divide bottom into top).

$$\frac{N}{D}$$

2. Conversion of a percentage to a decimal.

Replace % with a decimal and move decimal to the LEFT 2 places (only).

Example; 100% - 100. - 1.00 =1.

Example; 125% - 125. - 1.25 =1.25

Example; 75% - 75. - .75 =.75

3. Conversion of a decimal to a percentage.

Move decimal to the RIGHT two places, then replace with a % sign.

Example; 1.50 - 150. - 150% = 150%

Example; .45 - 45. - 45% = 45%

4. Complete the following for practice:

4-1. 3/4" as a decimal = ?

4-2. 1/8" as a decimal = ?

4-3. 1/16" as a decimal = ?

4-4. 1 1/4" as a decimal = ?

4-5. 2 3/8" as a decimal = ?

4-6. 1125% as a decimal = ?

4-7. .65 as a percentage = ?

4-8. 1.75 as a percentage = ?

4-9. 5% as a decimal = ?

4-10. 85% as a decimal = ?

4-11. Add the following; 1/16", 7/8", 3/4"

4-12. Add the following; 2 3/16", 3/8", 1/2"

4-13. Add the following; 1/16", 7/8", 3/4", 9/32"

4-14. Subtract 3/16" from 4 1/4"

4-15. Subtract 3/8" from 8 1/2"

Math Formulas

5. The formula to find reproduction percentage.

Scaling for enlargements or reductions, if original size and reproduction size are known. This formula is used to find the needed reproduction %.

$$\frac{I}{O} = P$$

I = ***Image size (size needed), when reproduced, output.***
O = ***Object, (original size), input.***
P = ***Percentage needed, (in decimal form, convert to % as needed).***

Substitute the letter with the correct measurement and divide the bottom (original) into the top (image).

Example #1: An 11" object needs to be sized to 5 1/2"

11" = Object

5 1/2" = Image size needed

? = Percentage needed

5.5 = Divide 11 into 5.5 = .5 ***move decimal two spaces to the right to get the percentage,*** or 50%

Example #2: A 3" object reproduced so that 3" will be 7 1/2"

3" = Object

7 1/2 = Image needed

? = %

7.5 = 7.5 divided by 3 = 2.5 or 250%
(don't forget to move the decimal place just two spaces)

5. Complete the following enlargement or reduction exercises:

5-1. 8.5" sized to 4.25" = ? %

5-2. 14" sized to 11" = ? %

5-3. 11/2" sized to 4" = ? %

5-4. 4.25" sized to 1" = ? %

5-5. 3" sized to 5.5" = ? %

5-6. 8.25" sized to 4 1/2" = ? %

5-7. 3/4" sized to 2.25" = ? %

5-8. 8" sized to 4 1/8" = ? %

5-9. 3 1/8" sized to 17" = ? %

5-10. 4 1/8" sized to 22 1/2" = ? %

Math FOrMulas

6. Formula used to find new reproduced image size if object and percentage are known.

This formula may also be used to check your work to verify the new image size if enlarging or reducing.
Use this formula to find the new size of an object if the percentage (%) and original size are known.

(O X P) X .01 = I

O = Original object

P = Percentage (as a percentage)

I = Image

Example #1: An 8" object reproduced at 75%

(8 X 75) X .01 = I
(600) X.01 = I
6.00 = I (6 inches is the new image size upon reproduction)

Shortcut; Use percentage in decimal form (.P) from the beginning:

O X .P = I

Using Shortcut:

8 X .75 = I (% changed to decimal from the beginning)
6.00 = I

Example #2: A 5" object reproduced at 150%

5 X 1.50 = I (remember move the decimal only 2 spaces)

7.5 = I (7 1/2 inches is the new size for the 5" original)

7. Complete the following resizing problems;

6-1. a 12" original sized at 75%, the new size = ?

6-2. a 5" original sized at 125%, the new size = ?

6-3. a 4.125" original sized at 105%, the new size = ?

6-4. a 2 1/2" original sized at 85%, the new size = ?

6-5. a 5.75" original sized at 160%, the new size = ?

6-6. a 2 1/4" original sized at 225%, the new size = ?

6-7. a 12" original sized at 75%, the new size = ?

6-8. a 2" X 3" original sized at 125%, the new sizes = ?
(Calculate both dimensions)

6-9. a 8 1/2" X 14" original sized at 77%, the new sizes = ?

6-10. a 4 1/4" x 6" original sized @ 135%, the new size is ?

Math FOrMulas

7. Using the previous formulas, complete the following:

7-1. 8 1/2" x 11" original sized so that 8 1/2" = 3.75

A. What % is needed?

B. What is the new size for 11?

7-2. A 5" x 7" original carries the notation reproduce at 75%.

A. What are the new dimensions for this job?

7-3. A 3.5" x 5" object is to be sized so that 3.5 will be 6 1/4.

A. What % is needed?

B. What is the new size for 5?

7-4. A 5.5" x 7 1/4" object is to be reproduced at 67%.

A. What are the new dimensions?

7-5. An 8" x 10" object is to be reproduced so that 8 = 6, and 10 = 7.

A. What percentages are needed, and which % is used to insure that the art will fit within the box?

8. Fill in the blanks for the correct amounts.

? ounces = pint.

? ounces = quart

? ounces = gallon

? quarts = gallon

8-1. 5 gallons = ? ounces

8-2. 4 gallons = ? quarts ? ounces

8-3. $3\frac{1}{2}$ gallons = ? quarts ? ounces

8-4. 704 ounces = ? gallons ? quarts

8-5. 64 ounces = ? gallons ? quarts