

Basic Math Skills

Name: _____

Convert the following fractions to decimals (to 2 decimal places):

$3/4 =$ _____

$3 \frac{7}{8} =$ _____

$20/3 =$ _____

$10\frac{1}{2} =$ _____

$5/4 =$ _____

$15/16 =$ _____

Convert the following decimals to fractions (in reduced form):

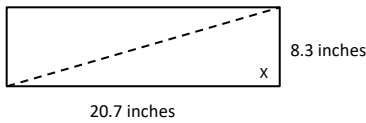
$0.125 =$ _____

$0.8 =$ _____

$5.4 =$ _____

Consider the following shapes and answer the questions (include units in your final answer):

Rectangle:



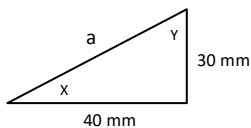
Perimeter = _____ (to 1 dec. place)

Area = _____ (to 1 dec. place)

Length of the dotted line = _____ (to 1 dec. place)

Angle "X" = _____^o

Right Angle (90°) Triangle:



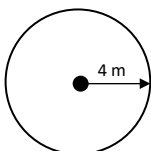
Length of side "a" = _____ (to 1 dec. place)

Perimeter = _____ (to 1 dec. place)

Area = _____ (to 1 dec. place)

If "angle X" is 37°, then angle Y = _____^o

Circle:

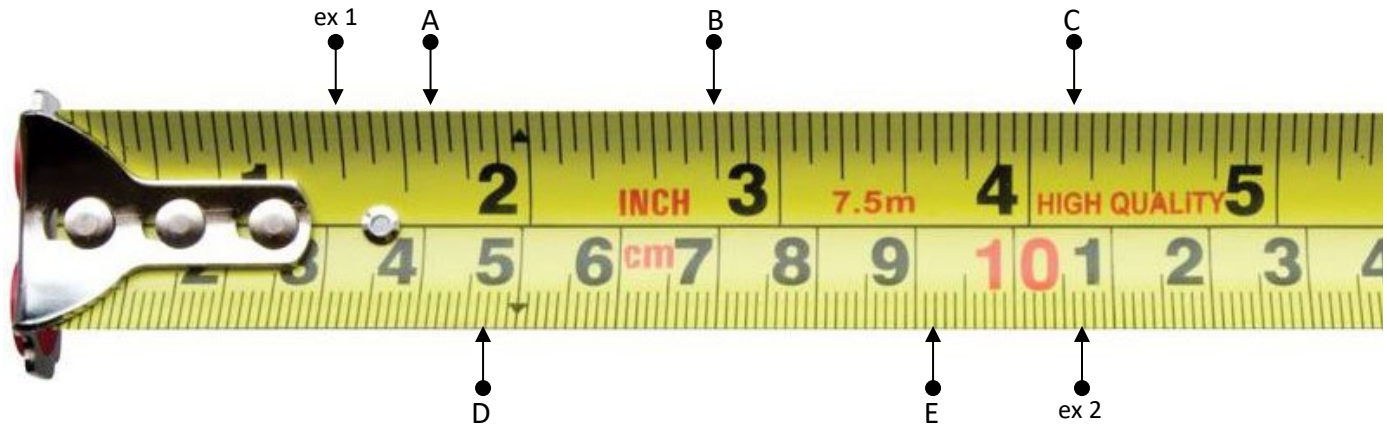


Diameter = _____

Circumference = _____ (to 1 dec. place)

Area = _____ (to 1 dec. place)

Look at the tape measure below and answer the questions:



Point "ex 1" is an example on the tape measure that is at $1\frac{1}{4}$ ".

Point "ex 2" is an example on the tape measure that is at 107 mm.

What is the measurement of point "A"? _____ inches (express as a reduced fraction)

What is the measurement of point "B"? _____ inches (express as a reduced fraction)

What is the measurement of point "D"? _____ mm

What is the measurement of point "E"? _____ mm

Show your work in calculating the distance between points "A" and "C" (express as a reduced fraction)

Show your work in calculating the distance between points "D" and "E" (express answer in mm)

On the tape measure diagram above, clearly label these points, using arrows, for the following measurements:

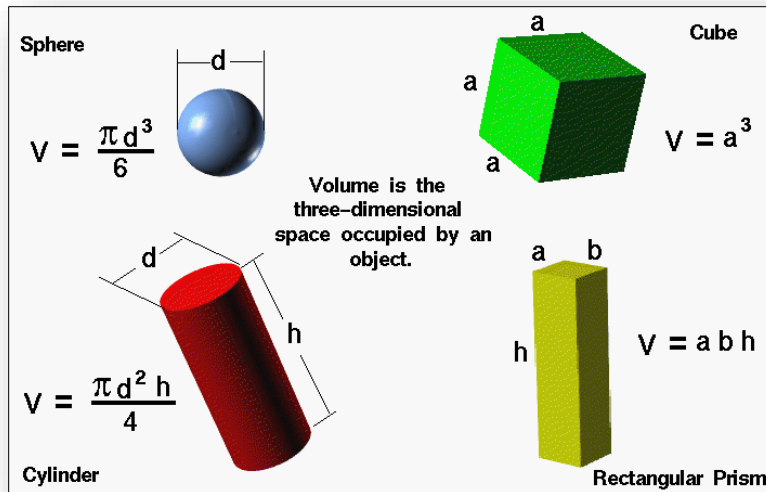
Point F = 63 mm

Point G = 22 mm

Point H = $2\frac{1}{8}$ "

Point I = 3.375 inches

Consider the following volume formulae:



1. What is the volume of a **cylinder** if the height is 4.5 metres and the diameter is 0.75 metres? (answer to 2 dec. places)

2. What is the volume of a **rectangular prism** if the dimensions are 3.5' x 10.4' x 9.0'? (answer to 2 dec. places)

3. What is the measurement of one edge (side "a") of a **cube**, if its volume is 450 cm³? (answer to 1 dec. place)

4. What is the volume of a **sphere** if its diameter is 9.24 inches? (answer to 2 dec. places)

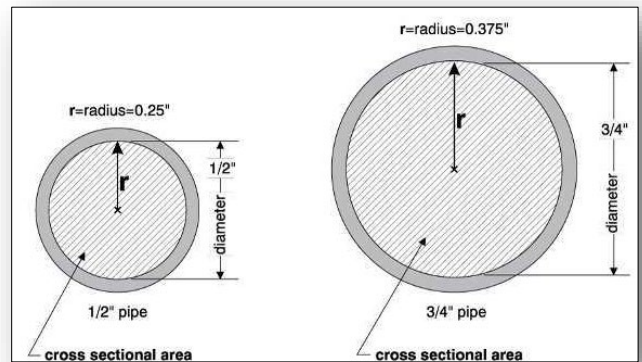
5. What is the volume of a **cylinder** if the height is four and a half feet and its radius is three quarters of a foot? (answer to 1 dec. place)

6. A sphere has a radius of 872 mm, what is its volume? (answer to 2 dec. places)

7. A plumber has two pipes, one has an inside diameter of $\frac{1}{2}$ " while the other's is $\frac{3}{4}$ ".

Recall: area of a circle = πr^2

- (a) What is the cross-sectional area of each pipe?



- (b) How much larger is the cross-sectional area of the larger pipe, as compared to the smaller one? Express your final answer in terms of a percentage to 3 decimal places.

8. Use basic trigonometry to help solve the following right angle triangle problems.

Sine - Cosine - Tangent

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Definitions:
Assign a name to the ratio of the length of the sides of a right triangle

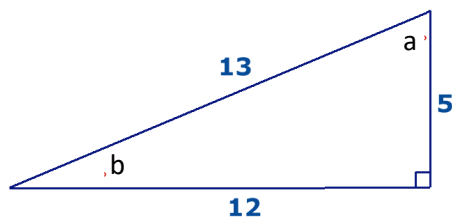
hypotenuse - h
adjacent - a
opposite - o
right angle = 90°

Sine (sin) = $\frac{o}{h}$ Cosine (cos) = $\frac{a}{h}$ Tangent (tan) = $\frac{o}{a}$

- (a) Find the distance of the "c-c" (center to center) measurement in this diagram. (answer to 1 decimal place)



- (b) What are the measurements, to 2 decimal places, of angles "a" and "b"?



Answer the following questions (show appropriate work):

1. What is 17% of 12? (round to 2 decimal places)

2. Divide $\frac{1}{4}$ into 25.

3. Add the following three measurements: $1/8''$, $3\ 1/4''$ and $10\ 15/16''$ (leave answer as a reduced fraction)

4. What is one-half of a one-third? (answer as a reduced fraction)

5. How many inches are in seven and a half feet?

6. Pi (π) is approximately 3.1416

Multiply this π decimal approximation by 6.544, then round this answer to the nearest hundredths. Express this rounded off answer decimal answer as a reduced fraction.

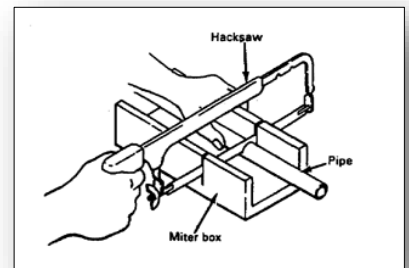
7. There is approximately 2.54 centimetres in an inch.

- a. How many cm are there in 26 inches? (round to a tenth).

- b. How many inches are there in 280 cm? (round to hundredths)

8. A piece of PVC piping is exactly 87.5" long.

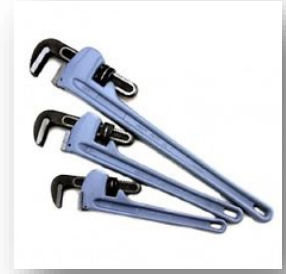
The plumber needs a good piece of pipe to measure exactly 6 feet in length. The width of a hack saw blade (aka kerf) is $1/16''$ and is used to cut the piping. What is the length of the shorter piece after the cut was made? (answer as a reduced fraction)



9. Subtract $14\ 3/8''$ from $19\ 17/32''$

Answer the following. (show appropriate work)

1. Ace Hardware Ltd. offers an \$11 rebate on a \$150 set of pipe wrenches. The Diamond Tool Company offers an 8% discount on the exact same set. Which is the better deal and by how much?



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2. Find the volume of an excavation for a pool that is 30' long by 22' wide by 10' deep.

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3. A plumber needs to drill a 0.625" wide pilot hole in some piping... express this in reduced fractional form.

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4. A room measures 3.5 metres \times 8.3 metres. What is the room's diagonal measurement? (2 decimal places)

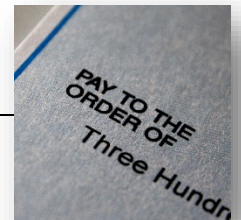
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5. A plumber has estimated $18 \frac{1}{2}$ hours to complete a job. So far, she has worked $5 \frac{3}{4}$ hours. How many hours are still required to finish the job?

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6. Convert 6.2% to a decimal.

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7. A plumber worked $7 \frac{1}{2}$ hours on Wednesday, $6 \frac{1}{4}$ hours on Thursday, and $4 \frac{3}{4}$ hours on Friday to finish off a bathroom. How many total hours did the plumber work?

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8. Assume the plumber in question #7 is paid \$14.75/hour and must pay income tax of 17% to the government.
 - a. What was her gross pay (before taxes) for completing the job?

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- b. How much money did she have to pay the government?



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9. Multiply these two fractions: $7 \frac{13}{16}$ and $10 \frac{1}{2}$. Leave the final answer as a mixed fraction (in reduced form).

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10. The scale on a building plan says $\frac{1}{4}'' = 2$ feet.

On a building plan it says a laundry room measures $3 \frac{1}{2}''$ by $4 \frac{3}{4}''$, what are the real building dimensions?