Applied Problems -

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Formulas -

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Common Formulas

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Simple Interest Formula

(Eg) Determine the simple interest that can be earned on $2500 invested at 8% for a period of 2 yrs?

① Determine the time it will take to make $450 in simple interest on an investment of $3000 at a rate of 5.5%

© Volume -

    Formula

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    Ⓔᵍ Instead of plastic mulch, you choose organic material. How much organic mulch must be purchased to cover the garden with a depth of 4 inches.

Circles -

    radius

    diameter

      •

① Circumference

    —

    Formula

    Ⓔᵍ radius = 15. Find diameter & circumference.

    Background

Eg You plan to irrigate some land that you own in Western Nebraska. The method of choice is a center point irrigation system which consists of a rigid arm with sprinklers that travels in a circle around a central pivot point. You believe you need an arm length of 500 feet to irrigate your field.
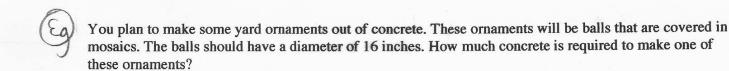How far will the end of the arm travel in one rotation?

② Area -

Formula

Eg How large an area will you be irrigating?

Sphere - volume

Formula

Eg You plan to make some yard ornaments out of concrete. These ornaments will be balls that are covered in mosaics. The balls should have a diameter of 16 inches. How much concrete is required to make one of these ornaments?
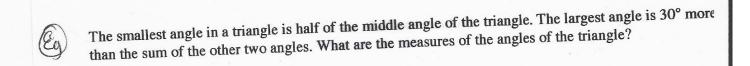
Right Circular Cylinder

Right Circular Cone

(Eg) A vegetable can is approximately 3 inches in diameter and 5 inches tall. How many cubic inches of corn can be put into this container?

Geometric Problems

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Degrees in a △

(Eg) The smallest angle in a triangle is half of the middle angle of the triangle. The largest angle is 30° more than the sum of the other two angles. What are the measures of the angles of the triangle?

Equilateral △

Isosceles △

(Eg) The third angle of an isosceles triangle is 60° more than any one of the other angles. What are the measures of the angles of the triangle?

Angles
① Right
② complementary

③ Straight

④ Supplementary –

(Eg) If angle A and angle B are complementary angles, and angle B is 8° less than 3 times angle A, what are the measures of angle A and angle B?

Quadrilateral

(Eg) The measure of one angle of a quadrilateral is 10° greater than the smallest angle, the third angle is 14° greater than twice the smallest angle, and the fourth angle is 21° greater than the smallest angle. Determine the measures of the four angles in the quadrilateral.

(1) If the two smaller angles of a parallelogram have equal measures and the two larger angles are each 30° larger than each smaller angle, determine the measure of each angle.

(2) The perimeter of a basement floor is 360 feet.
   a. If the basement is rectangular in shape and the length of the basement is twice the width, what is the area of the basement?

   b. If the basement is circular in shape, what is the area of the basement?

Ratio -
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    (Eg) Female persons to

    (Eg) Number of chairs to

    (Eg) HDL to

    (Eg) Gas to

    (Eg) 3 days to

Rate -
—

    (Eg) Miles to

    (Eg) Miles to

    (Eg) Gallons per

    (Eg) Threads per

    (Eg) Rotations per

Proportions -

[Method] Evaluating a proportion

Eg) Determine if $\frac{4}{7} = \frac{76}{133}$ are equal

Eg) Solve for the missing value: $\frac{3}{8} = \frac{?}{56}$

Method | To solve a proportion (Direct)

1.

2.

3.

4.

5.

Eg) If six oranges cost $0.75, how much will 8 oranges cost?

1) If a man 6 ft. tall casts a shadow of 4 ft., how tall is a pole that casts a shadow or 12 ft. at the same time of day?

Eg) If a bell is made of 8 parts tin and 12 parts copper, and the bell weights 400 lbs.
    a. How much tin is in the bell?

    b. How much copper is in the bell?

1) If your lawn mower calls for a mixture of 75:1, gas to oil, how much oil do you need to mix with 1 gallon of gas. (Note: 1 gallon = 128 ounces)

2) 12 gallons of diesel fuel costs $20.88. How much would 16.5 gallons of the same fuel cost?

3) How many miles are there in 102,960 feet? (Note: 5280 feet = 1 mile)

(Eg) On May 13 researchers at Fish Lake tagged 840 fish. When the returned on October 12, their sample of 1000 fish showed that 18 were tagged. Approximately how many fish are in Fish Lake?