

Rearranging Formulas

Learning Goals

- determine order of operations
- use formulas to solve real world problems

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(6.2) Rearranging Formulas

Formulas usually express one variable in terms of one or more variables.
To rearrange the order of the formula, use opposite operations

INVERSE OPERATIONS

MULTIPLICATION



division

ADDITION



subtraction

SQUARE



√

Steps:

1. Determine operations.
2. Follow backwards BEDMAS.
3. Whatever you do to one side, you must do to the other side.

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EXAMPLE: Rearrange the formula for the indicated variable:

A) Isolate P in the formula: $A = P + I$

$$A - I = P + I - I$$

$$A - I = P$$

B) Isolate h in the formula: $V = lwh$

$$\frac{V}{lw} = \frac{\cancel{l}w\cancel{h}}{\cancel{lw}}$$

$$\frac{V}{lw} = h$$

C) Isolate V in the formula: $I = \frac{V}{R}$

$$I(R) = \frac{V}{\cancel{R}}(\cancel{R})$$

$$I(R) = V$$

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EXAMPLE: Convert 30°C to degrees Fahrenheit using the formula $C = \frac{5(F-32)}{9}$

Isolate F in the formula:

$$C(9) = \frac{5(F-32)}{\cancel{9}}(\cancel{9})$$

$$\frac{9C}{5} = \frac{\cancel{5}(F-32)}{\cancel{5}}$$

$$\frac{9C}{5} + 32 = F$$

Substitute in $C=30^{\circ}\text{C}$:

$$\frac{9(30)}{5} + 32 = F$$

Therefore, 30°C is 86.

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The area of the circle is given by the formula $A = \pi r^2$.

Isolate r

$$\frac{A}{\pi} = \frac{\pi r^2}{\pi}$$
$$\frac{A}{\pi} = r^2$$
$$\sqrt{\frac{A}{\pi}} = r$$

If the area of the circle is 5 m², how long is the radius?

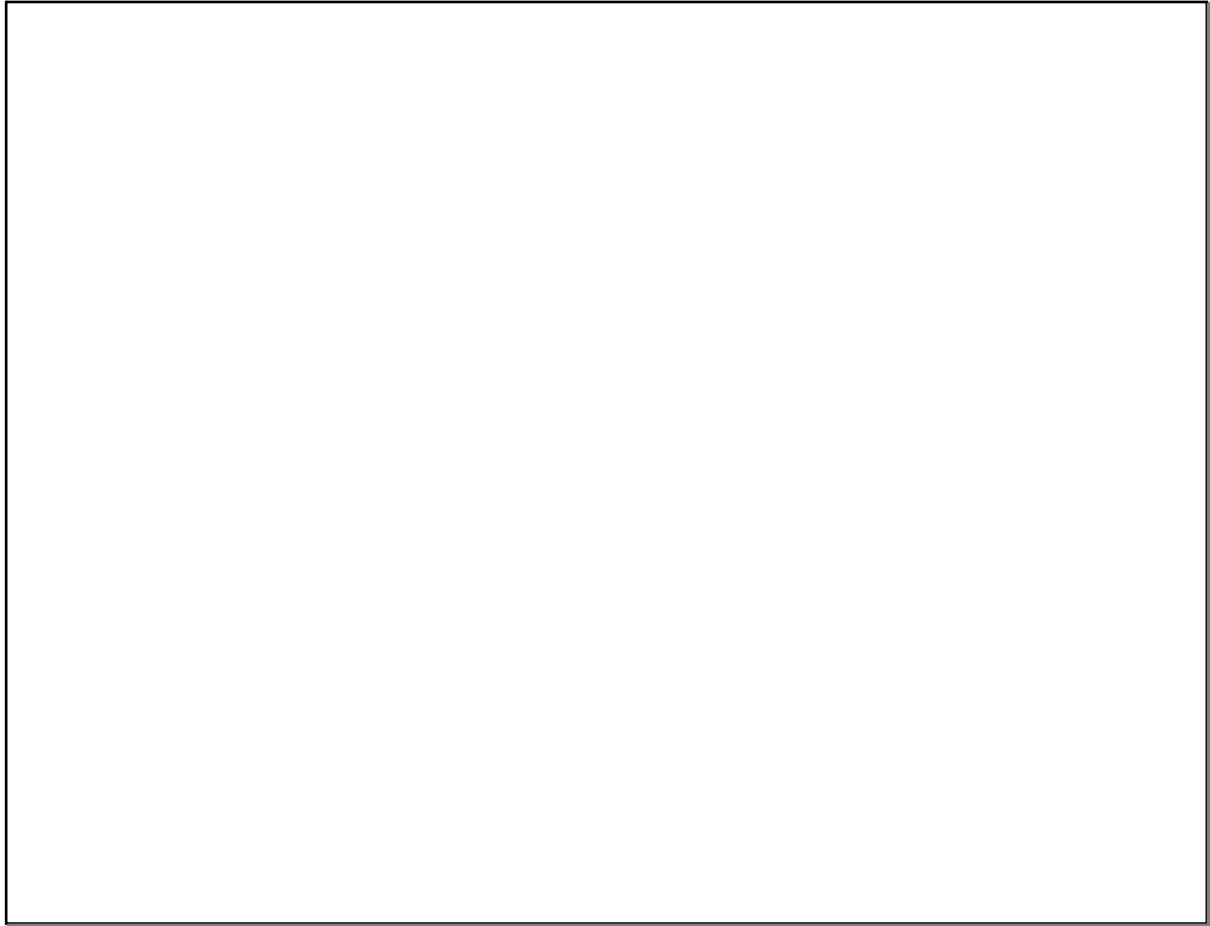
$$r = \sqrt{\frac{A}{\pi}}$$
$$= \sqrt{\frac{5}{\pi}} = \sqrt{1.59} = 1.26$$

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Seatwork

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Isolate x .

$$y = (5x + 3) \div 7$$

What are the steps according to BEDMAS?

① Brackets
- multiply
- add

② Divide

What are the steps BACKWARDS?

→ ① Multiply

→ ② Subtract

→ ③ Division

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