

NAME _____

DATE _____

Module 3 Solving Linear Equations
of One Variable
Lesson 6 Rewriting Formulas



**independent
practice**

Rearrange each formula to isolate the variable indicated.

1. $A = ph$ for p
 $p = \frac{A}{h}$

2. $A = ph$ for h
 $h = \frac{A}{p}$

3. $A + B + C = 180$ for B
 $B = 180 - A - C$

4. $A + B + C = 180$ for A
 $A = 180 - B - C$

5. $x + y = 90$ for x
 $x = 90 - y$

6. $x + y = 180$ for y
 $y = 180 - x$

7. $M = \frac{(x + y)}{2}$ for x
 $x = 2M - y$

8. $M = \frac{(x + y)}{2}$ for y
 $y = 2M - x$

9. $d = 24h$ for h
 $h = \frac{d}{24}$

10. $A = \frac{1}{2}mn$ for m
 $m = \frac{2A}{n}$

11. $S = 2\pi r^2 + 2\pi rh$ for h
 $h = \frac{(S - 2\pi r^2)}{2\pi r}$

12. $E = mc^2$ for m
 $m = \frac{E}{c^2}$

13. $p = md$ for d
 $d = \frac{p}{m}$

14. $h = \frac{s\sqrt{3}}{2}$ for s
 $s = \frac{2h}{\sqrt{3}}$ or $s = \frac{2h\sqrt{3}}{3}$

15. $V = \frac{Ah}{3}$ for A
 $A = \frac{3V}{h}$

16. $V = \frac{Ah}{3}$ for h
 $h = \frac{3V}{A}$

17. $s = r\theta$ for r
 $r = \frac{s}{\theta}$

18. $s = r\theta$ for θ
 $\theta = \frac{s}{r}$

19. $A = \frac{\theta r^2}{2}$ for θ
 $\theta = \frac{2A}{r^2}$

20. $a^2 + b^2 = c^2$ for a
 $a = \pm \sqrt{c^2 - b^2}$

Journal

1. Why is it useful to rewrite equations? Give an example to support your conclusion.
2. Can width always be found by the formula $w = \frac{A}{l}$. Why or why not?
3. How are perimeter and area alike and different?
4. Why is it necessary to be able to convert degrees Fahrenheit to degrees Celsius and vice versa?
5. Using the formula $d = rt$, explain how you would find time if you knew the distance and the rate.

Cumulative Review

Simplify.

1. $7.25 - 9.3$ -2.05
2. $5\frac{2}{3} + 7\frac{1}{3}$ 13
3. $-\frac{5}{11} + (-\frac{3}{11})$ $-\frac{8}{11}$
4. $17 - 3\frac{4}{5}$ $13\frac{1}{5}$
5. $\sqrt{5^2 - 4 \cdot 1 \cdot 3}$ $\sqrt{13}$
6. $4^3 - 3^2$ 55

Supply the missing properties in the following algebraic proof.

$$2x + 5 = 68 - x$$

7. Given

$$2x + 5 + x = 68 - x + x$$

8. Addition Property of Equality

$$3x + 5 = 68$$

9. Subtraction Property of Equality

$$3x + 5 - 5 = 68 - 5$$

$$3x = 63$$

10. Division Property or Equality

$$\frac{3x}{3} = \frac{63}{3}$$

$$x = 21$$

Possible Journal Answers

1. It is useful to be able to rewrite formulas so that you can isolate and find values for different variables in a formula. In the formula for the area of a circle, $A = 2\pi r$, if you know the area, you can solve for r to find the radius of the circle.
2. Width can always be found by the formula $w = \frac{A}{l}$ so long as $A \geq 0$ and $l > 0$.
3. Perimeter and area are alike in that they both try to find a value for some surface, the outside of an object for perimeter and the enclosed portion or inside for area. They differ in their units. If perimeter is in inches, area is in inches squared.
4. It is necessary to convert degrees Fahrenheit to degrees Celsius and vice versa in order to understand a temperature that has been converted. If you generally see temperatures in degrees Fahrenheit and you are given a temperature in degrees Celsius, you can convert this number to degrees Fahrenheit to understand how hot or cold the temperature is.
5. By dividing both sides by the (nonzero) rate, r , we have $t = \frac{d}{r}$. You can now find the time by the given equation.