

**A.A.23: Transforming Formulas 3: Solve literal equations for a given variable**

1 If  $bx - 2 = K$ , then  $x$  equals

- 1)  $\frac{K}{b} + 2$
- 2)  $\frac{K-2}{b}$
- 3)  $\frac{2-K}{b}$
- 4)  $\frac{K+2}{b}$

2 If  $x = 2a - b^2$ , then  $a$  equals

- 1)  $\frac{x-b^2}{2}$
- 2)  $\frac{x+b^2}{2}$
- 3)  $\frac{b^2-x}{2}$
- 4)  $x + b^2$

3 If  $2m + 2p = 16$ ,  $p$  equals

- 1)  $8 - m$
- 2)  $16 - m$
- 3)  $16 + 2m$
- 4)  $9m$

4 In the equation  $A = p + prt$ ,  $t$  is equivalent to

- 1)  $\frac{A-pr}{p}$
- 2)  $\frac{A-p}{pr}$
- 3)  $\frac{A}{pr} - p$
- 4)  $\frac{A}{p} - pr$

5 If  $c = 2m + d$ , then  $m$  is equal to

- 1)  $\frac{c-d}{2}$
- 2)  $\frac{c}{2} - d$
- 3)  $c - \frac{d}{2}$
- 4)  $d - 2c$

6 Sean knows the length of the base,  $b$ , and the area,  $A$ , of a triangular window in his bedroom. Which formula could he use to find the height,  $h$ , of this window?

- 1)  $h = 2A - b$
- 2)  $h = \frac{A}{2b}$
- 3)  $h = (2A)(b)$
- 4)  $h = \frac{2A}{b}$

7 The formula for the volume of a right circular cylinder is  $V = \pi r^2 h$ . The value of  $h$  can be expressed as

- 1)  $\frac{V}{\pi} r^2$
- 2)  $\frac{V}{\pi r^2}$
- 3)  $\frac{\pi r^2}{V}$
- 4)  $V - \pi r^2$

8 The formula for potential energy is  $P = mgh$ , where  $P$  is potential energy,  $m$  is mass,  $g$  is gravity, and  $h$  is height. Which expression can be used to represent  $g$ ?

- 1)  $P - m - h$
- 2)  $P - mh$
- 3)  $\frac{P}{m} - h$
- 4)  $\frac{P}{mh}$

9 If  $9x + 2a = 3a - 4x$ , then  $x$  equals

- 1)  $a$
- 2)  $-a$
- 3)  $\frac{5a}{12}$
- 4)  $\frac{a}{13}$

10 If  $x + y = 9x + y$ , then  $x$  is equal to

- 1)  $y$
- 2)  $\frac{1}{5}y$
- 3)  $0$
- 4)  $8$

11 If  $7x + 2a = 3x + 5a$ , then  $x$  is equivalent to

- 1)  $\frac{7a}{10}$
- 2)  $\frac{7a}{4}$
- 3)  $\frac{3a}{10}$
- 4)  $\frac{3a}{4}$

12 If  $2ax - 5x = 2$ , then  $x$  is equivalent to

- 1)  $\frac{2+5a}{2a}$
- 2)  $\frac{1}{a-5}$
- 3)  $\frac{2}{2a-5}$
- 4)  $7-2a$

13 If  $\frac{x}{4} - \frac{a}{b} = 0$ ,  $b \neq 0$ , then  $x$  is equal to

- 1)  $-\frac{a}{4b}$
- 2)  $\frac{a}{4b}$
- 3)  $-\frac{4a}{b}$
- 4)  $\frac{4a}{b}$

14 The equation  $P = 2L + 2W$  is equivalent to

- 1)  $L = \frac{P-2W}{2}$
- 2)  $L = \frac{P+2W}{2}$
- 3)  $2L = \frac{P}{2W}$
- 4)  $L = P - W$

15 Which equation is equivalent to  $3x + 4y = 15$ ?

- 1)  $y = \frac{15-3x}{4}$
- 2)  $y = \frac{3x-15}{4}$
- 3)  $y = 15-3x$
- 4)  $y = 3x-15$

16 Solve:  $(a-x)(b-x) = x^2$

17 Shoe sizes and foot length are related by the formula  $S = 3F - 24$ , where  $S$  represents the shoe size and  $F$  represents the length of the foot, in inches.

*a* Solve the formula for  $F$ .

*b* To the nearest tenth of an inch, how long is the foot of a person who wears a size  $10\frac{1}{2}$  shoe?

### A.A.23: Transforming Formulas 3: Solve literal equations for a given variable

#### Answer Section

1 ANS: 4

$$bx - 2 = K$$

$$bx = K + 2$$

$$x = \frac{K + 2}{b}$$

REF: 010116a

2 ANS: 2

$$x = 2a - b^2$$

$$x + b^2 = 2a$$

$$\frac{x + b^2}{2} = a$$

REF: 060219a

3 ANS: 1

$$2m + 2p = 16$$

$$2p = 16 - 2m$$

$$p = \frac{16 - 2m}{2}$$

$$p = \frac{2(8 - m)}{2}$$

$$p = 8 - m$$

REF: 080218a

4 ANS: 2

$$A = p + prt$$

$$A - p = prt$$

$$\frac{A - p}{pr} = t$$

REF: 010620a

5 ANS: 1

$$c = 2m + d$$

$$c - d = 2m$$

$$m = \frac{c - d}{2}$$

REF: 060719a

6 ANS: 4

$$A = \frac{1}{2}bh$$

$$2A = bh$$

$$h = \frac{2A}{b}$$

REF: 010517a

7 ANS: 2

$$V = \pi r^2 h$$

$$\frac{V}{\pi r^2} = h$$

REF: 060617a

8 ANS: 4

$$P = mgh$$

$$g = \frac{P}{mh}$$

REF: 010710a

9 ANS: 4

$$9x + 2a = 3a - 4x$$

$$a = 13x$$

$$\frac{a}{13} = x$$

REF: 010011a

10 ANS: 3

$$x + y = 9x + y$$

$$x = 9x$$

$$0 = 8x$$

$$x = 0$$

REF: 060310a

11 ANS: 4

$$7x + 2a = 3x + 5a$$

$$4x = 3a$$

$$x = \frac{3a}{4}$$

REF: 060513a

12 ANS: 3

$$2ax - 5x = 2$$

$$x(2a - 5) = 2$$

$$x = \frac{2}{2a - 5}$$

REF: 010421a

13 ANS: 4

$$\frac{x}{4} - \frac{a}{b} = 0$$

$$\frac{x}{4} = \frac{a}{b}$$

$$bx = 4a$$

$$x = \frac{4a}{b}$$

REF: 080530a

14 ANS: 1

$$P = 2L + 2W$$

$$P - 2W = 2L$$

$$\frac{P - 2W}{2} = L$$

REF: 010310a

15 ANS: 1

$$3x + 4y = 15$$

$$4y = 15 - 3x$$

$$y = \frac{15 - 3x}{4}$$

REF: 080722a

16 ANS:

$$\frac{a^2}{a + b}$$

REF: 039008a1

17 ANS:

$$S = 3F - 24$$

$$\frac{S + 24}{3}, 11.5. \quad S + 24 = 3F \quad . \quad F = \frac{(10.5) + 24}{3} = 11.5$$

$$F = \frac{S + 24}{3}$$

REF: 069922a