

Section 1-2: Formulas

MULTIPLE CHOICE

1. Evaluate the distance formula $d = rt$ using the given values of the variables.

$$r = 50 \text{ mph}, d = 200 \text{ mi}$$

- a. $t = 0.3 \text{ hr}$
- b. $t = 250.0 \text{ hr}$
- c. $t = 150.0 \text{ hr}$
- d. $t = 10,000.0 \text{ hr}$
- e. $t = 4 \text{ hr}$

ANS: E

PTS: 1

REF: 1.2.1

MSC: tjfa04t.01.04.01m

2. Evaluate the simple interest formula $I = Prt$ using the given values of the variables.

$$P = \$4,000, r = 4\%, t = 7 \text{ years}$$

- a. $I = \$1,090$
- b. $I = \$2,286$
- c. $I = \$112,000$
- d. $I = \$11,200$
- e. $I = \$1,120$

ANS: E

PTS: 1

REF: 1.2.3

MSC: tjfa04t.01.04.03m

3. Evaluate the formula for the area of circle $A = \pi r^2$, if $r = 4 \text{ in.}$ Use $\pi = 3.14$.

- a. $A = 39.44 \text{ in.}^2$
- b. $A = 25.12 \text{ in.}^2$
- c. $A = 50.24 \text{ in.}^2$
- d. $A = 51 \text{ in.}^2$
- e. $A = 12.56 \text{ in.}^2$

ANS: C

PTS: 1

REF: 1.2.5

MSC: tjfa04t.01.04.05m

4. Evaluate the formula for the area of triangle $A = \frac{1}{2}bh$ using the given values of the variables.

$$A = 80 \text{ in.}^2, b = 16 \text{ in.}$$

- a. $h = 322 \text{ in.}$
- b. $h = 2.5 \text{ in.}$
- c. $h = 10 \text{ in.}$
- d. $h = 13 \text{ in.}$
- e. $h = 320 \text{ in.}$

ANS: C

PTS: 1

REF: 1.2.7

MSC: tjfa04t.01.04.07m

5. Evaluate the Hero's formula for the area of triangle $A = \sqrt{s(s-a)(s-b)(s-c)}$ using the given values of the variables.

$$s = 12 \text{ in.}, a = 6 \text{ in.}, b = 8 \text{ in.}, c = 10 \text{ in.}$$

- a. $A = 49 \text{ in.}^2$
- b. $A = 48 \text{ in.}^2$
- c. $A = 24 \text{ in.}^2$
- d. $A = 7 \text{ in.}^2$
- e. $A = 576 \text{ in.}^2$

ANS: C

PTS: 1

REF: 1.2.9

MSC: tjfa04t.01.04.09m

6. Evaluate the formula of conversion of Fahrenheit to Celsius $C = \frac{5}{9}(F - 32)$, if $F = 80^\circ$.

- a. $C = 12.4^\circ$
- b. $C = 26.7^\circ$
- c. $C = 19.3^\circ$
- d. $C = 11.9^\circ$
- e. $C = 27.2^\circ$

ANS: B

PTS: 1

REF: 1.2.11

MSC: tjfa04t.01.04.11m

7. Evaluate the formula of conversion of Celsius to Fahrenheit $F = \frac{9}{5}C + 32$, if $C = -20^\circ$.

- a. $F = -68^\circ$
- b. $F = 20.9^\circ$
- c. $F = -3.7^\circ$
- d. $F = -43.1^\circ$
- e. $F = -4^\circ$

ANS: E

PTS: 1

REF: 1.2.13

MSC: tjfa04t.01.04.13m

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

8. Evaluate the formula of slope of a line using the given values of the variables.

$$(x_1, y_1) = (-6, 2), (x_2, y_2) = (-4, -3)$$

- a. $m = -\frac{1}{10}$
- b. $m = \frac{1}{10}$
- c. $m = -\frac{2}{5}$

d. $m = \frac{5}{2}$

e. $m = -\frac{5}{2}$

ANS: E

PTS: 1

REF: 1.2.15

MSC: tjfa04t.01.04.15m

9. Evaluate the compound interest formula $I = P \left(1 + \frac{r}{n} \right)^{nt}$ using the given values of the variables. Round your answer to the nearest cent.

$P = \$2,021$, $r = 4.2\%$, $n = 12$, $t = 4$

- a. $I = \$7,312.81$
- b. $I = \$2,390.01$
- c. $I = \$10,536.66$
- d. $I = \$369.01$
- e. $I = \$1,541.84$

ANS: B

PTS: 1

REF: 1.2.22

MSC: tjfa04t.01.04.17m

10. Evaluate the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ using the given values of the variables.

$a = 1$, $b = -3$, $c = -4$

- a. $x = 1, -4$
- b. $x = -4$
- c. $x = -1, 4$
- d. $x = 4$
- e. $x = -1, 1$

ANS: C

PTS: 1

REF: 1.2.23

MSC: tjfa04t.01.04.19m

11. Evaluate the exponential growth formula $y = Ae^{rt}$ using the given values of the variables. Round your answer to the nearest integer.

$A = 1,610,000$ bacteria, $r = 7.1\%$ per hour, $t = 27$ hr

- a. $y = 9,339,347$ bacteria
- b. $y = 340,605,058,902,444$ bacteria
- c. $y = 10,949,317$ bacteria
- d. $y = 10,948,847$ bacteria
- e. $y = 9,338,847$ bacteria

ANS: D

PTS: 1

REF: 1.2.25

MSC: tjfa04t.01.04.21m

12. Solve the formula (simple interest) $I = Prt$ for the letter r .

- a. $r = I^{Pt}$
- b. $r = I + Pt$
- c. $r = I - Pt$
- d. $r = IPt$
- e. $r = \frac{I}{Pt}$

ANS: E

PTS: 1

REF: 1.2.27

MSC: tjfa04t.01.04.23m

13. Solve the formula (volume of a rectangular solid) $V = lwh$ for the letter w .

- a. $w = \frac{1}{Vlh}$
- b. $w = \frac{V}{lh}$
- c. $w = \frac{lh}{V}$
- d. $w = \frac{Vl}{h}$
- e. $w = Vlh$

ANS: B

PTS: 1

REF: 1.2.28

MSC: tjfa04t.01.04.29m

14. Solve the formula (area of a triangle) $A = \frac{1}{2}bh$ for the letter b .

- a. $b = \frac{2h}{A}$
- b. $b = \frac{A}{2h}$
- c. $b = 2Ah$
- d. $b = \frac{2A}{h}$
- e. $b = \frac{h}{2A}$

ANS: D

PTS: 1

REF: 1.2.29

MSC: tjfa04t.01.04.25m

15. Solve the formula (volume of a right pyramid) $V = \frac{1}{3}bh$ for the letter b .

- a. $b = \frac{h}{3V}$
- b. $b = \frac{V}{h}$
- c. $b = \frac{3h}{V}$
- d. $b = \frac{V}{3h}$
- e. $b = \frac{3V}{h}$

ANS: E

PTS: 1

REF: 1.2.30

MSC: tjfa04t.01.04.33m

16. Solve the formula (average of two numbers) $A = \frac{x + y}{2}$ for the letter x .

- a. $x = A - 2y$
- b. $x = \frac{1}{2}A - y$
- c. $x = 2A + y$
- d. $x = \frac{1}{2}A + y$
- e. $x = 2A - y$

ANS: E

PTS: 1

REF: 1.2.37

MSC: tjfa04t.01.04.27m

NUMERIC RESPONSE

1. Evaluate the distance formula $d = rt$ using the given values of the variables. Round your answer to the nearest tenth, if necessary.

$$r = 50 \text{ mph}, d = 250 \text{ mi}$$

$$t = \underline{\hspace{2cm}} \text{ hr}$$

ANS: 5

PTS: 1

REF: 1.2.2

MSC: tjfa04t.01.04.01

2. Evaluate the simple interest formula $I = Prt$ using the given values of the variables.

$$P = \$8,000, r = 7\%, t = 8 \text{ years}$$

$$I = \underline{\hspace{2cm}}$$

ANS: 4,480

PTS: 1

REF: 1.2.4

MSC: tjfa04t.01.04.03

3. Evaluate the formula for the area of circle $A = \pi r^2$, if $r = 2 \text{ in.}$ Use $\pi = 3.14$. Do not round your answer.

$$A = \underline{\hspace{2cm}} \text{ in.}^2$$

ANS: 12.56

PTS: 1

REF: 1.2.6

MSC: tjfa04t.01.04.05

4. Evaluate the formula for the area of triangle $A = \frac{1}{2}bh$ using the given values of the variables.

$$A = 98 \text{ in.}^2, b = 14 \text{ in.}$$

$$h = \underline{\hspace{2cm}} \text{ in.}$$

ANS: 14

PTS: 1

REF: 1.2.8

MSC: tjfa04t.01.04.07

5. Evaluate the Hero's formula for the area of triangle $A = \sqrt{s(s-a)(s-b)(s-c)}$ using the given values of the variables.

$$s = 15 \text{ in.}, a = 5 \text{ in.}, b = 12 \text{ in.}, c = 13 \text{ in.}$$

$$A = \underline{\hspace{2cm}} \text{ in.}^2$$

ANS: 30

PTS: 1

REF: 1.2.10

MSC: tjfa04t.01.04.09

6. Evaluate the formula of conversion of Fahrenheit to Celsius $C = \frac{5}{9}(F - 32)$, if $F = 95^\circ$. Round your answer to one decimal place, if necessary.

$$C = \underline{\hspace{2cm}}^\circ$$

ANS: 35

PTS: 1

REF: 1.2.12

MSC: tjfa04t.01.04.11

7. Evaluate the formula of conversion of Celsius to Fahrenheit $F = \frac{9}{5}C + 32$, if $C = 15^\circ$. Round your answer to one decimal place, if necessary.

$$F = \underline{\hspace{2cm}}^\circ$$

ANS: 59

PTS: 1

REF: 1.2.14

MSC: tjfa04t.01.04.13

8. Evaluate the compound interest formula $I = P \left(1 + \frac{r}{n} \right)^{nt}$ using the given values of the variables. Round your answer to the nearest cent.

$$P = \$5,800, r = 5.4\%, n = 12, t = 6$$

$$I = \$ \underline{\hspace{2cm}}$$

ANS: 8,013.53

PTS: 1

REF: 1.2.21

MSC: tjfa04t.01.04.17

9. Evaluate the exponential growth formula $y = Ae^{rn}$ using the given values of the variables. Round your answer to the nearest integer.

$A = 1,450,000$ bacteria, $r = 4.8\%$ per hour, $n = 3$ hr

_____ bacteria

ANS: 1,674,582

PTS: 1

REF: 1.2.26

MSC: tjfa04t.01.04.21

SHORT ANSWER

1. Evaluate the formula of slope of a line $m = \frac{y_2 - y_1}{x_2 - x_1}$ using the given values of the variables. Give your answer as a fraction in lowest terms.

$$(x_1, y_1) = (-9, 2), (x_2, y_2) = (10, 3)$$

ANS:

$$m = \frac{1}{19}$$

PTS: 1

REF: 1.2.16

MSC: tjfa04t.01.04.15

2. Evaluate the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ using the given values of the variables.

$$a = 1, b = -1, c = -2$$

$$x = \underline{\hspace{1cm}}, \underline{\hspace{1cm}}$$

ANS:

2,-1

PTS: 1

REF: 1.2.24

MSC: tjfa04t.01.04.19

3. Solve the formula (area of a triangle) $A = \frac{1}{2}bh$ for the letter b .

ANS:

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

PTS: 1

REF: 1.2.33

MSC: tjfa04t.01.04.25

4. Solve the formula (average of two numbers) $A = \frac{x + y}{2}$ for the letter x .

ANS:

$$x=2A-y$$

PTS: 1

REF: 1.2.34

MSC: tjfa04t.01.04.27