**1** The owner of a small computer repair business has one employee, who is paid an hourly rate of $22. The owner estimates his weekly profit using the function $P(x) = 8600 - 22x$. In this function, x represents the number of

(1) computers repaired per week

(2) hours worked per week

(3) customers served per week

(4) days worked per week

1hr   22·1 = $22

2hrs   22·2 = $44

Xhrs   22·X = 22x

22   x

hourly wage   number of hours
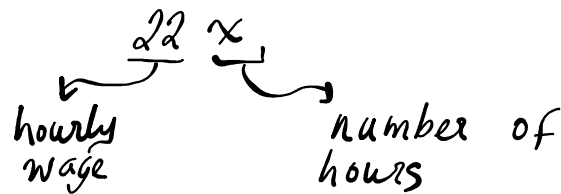
2 Peyton is a sprinter who can run the 40-yard dash in 4.5 seconds. He converts his speed into miles per hour, as shown below.

$$\frac{40 \text{ yd}}{4.5 \text{ sec}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

time   time

miles per hour

$$\frac{miles}{hour}$$

Which ratio is *incorrectly* written to convert his speed?

(1) $\dfrac{3 \text{ ft}}{1 \text{ yd}}$

(2) $\dfrac{5280 \text{ ft}}{1 \text{ mi}}$

(3) $\dfrac{60 \text{ sec}}{1 \text{ min}}$

(4) $\dfrac{60 \text{ min}}{1 \text{ hr}}$

yards → miles

seconds → hours

3 Which equation has the same solutions as $2x^2 + x - 3 = 0$?

(1) $(2x - 1)(x + 3) = 0$ (3) $(2x - 3)(x + 1) = 0$

(2) $(2x + 1)(x - 3) = 0$ [(4)] $(2x + 3)(x - 1) = 0$

$\underline{a}x^2 + \underline{b}x + \underline{c}$

$$\overset{a}{2}x^2 + \overset{b}{1}x \overset{c}{-3} = 0$$

$$2x^2 - 2x + 3x - 3 = 0$$

$$2x(x - 1) + 3(x - 1) = 0$$

$$(x - 1)(2x + 3) = 0$$

$$(2x + 3)(x - 1) = 0$$

$$\begin{array}{c} ac \\ -6 \\ -2 \diagdown\!\!\!\!\diagup 3 \\ 1 \\ b \end{array}$$

4 Krystal was given \$3000 when she turned 2 years old. Her parents invested it at a 2% interest rate compounded annually. No deposits or withdrawals were made. Which expression can be used to determine how much money Krystal had in the account when she turned 18?

$= \dfrac{.02}{100}$

[(1)] $3000(1 + 0.02)^{16}$ (3) $3000(1 + 0.02)^{18}$

(2) $3000(1 - 0.02)^{16}$ (4) $3000(1 - 0.02)^{18}$

$$A = P(1 + r)^t$$

A = final amount

P = Initial amount

r = interest rate (decimal form)

t = time

$A = ?$

$P = \$3000$

$r = .02$

$t = 18 - 2 = 16$

$$A = P(1 + r)^t$$

$$A = 3000(1 + 0.02)^{16}$$

5 Which table of values represents a linear relationship?

x	f(x)
−1	−3
0	−2
1	1
2	6
3	13

(1) −5, −7

x	f(x)
−1	−3
0	−1
1	1
2	3
3	5

(3) −2, −2, −2, −2

growth rate constantly −2

$y = \underline{m}x + b$

growth is constant for linear relationship

x	f(x)
−1	$\frac{1}{2}$
0	1
1	2
2	4
3	8

(2) −2, −4

x	f(x)
−1	−1
0	0
1	1
2	8
3	27

(4)