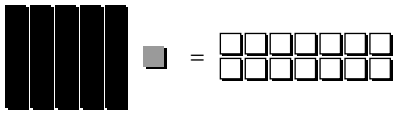
## Answers

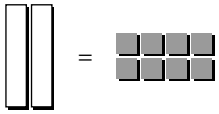
**Get Ready, pages 420–421**

**1. a)** $2x - 6 = 6$ **b)** $6 = 3x - 9$

**2. a)**



**b)**



**3.** $x = -4$ **b)** $x = -5$

**4. a)** $x = 0.8$ **b)** $x = -4$

**Math Link**

**a)** 15 **b)** The mass of vitamin C in a pink grapefuit is 94 g. **c)** 450

**2.** Answers will vary. Example: **a)** banana; apple

**b)**

| | **Fruit #1: *banana* *225 grams* Nutritional Information** | **Fruit #2 : *apple* *125 grams* Nutritional Information** |
|---|---|---|
| Vitamin C | *10.3 mg* | *8.4 mg* |
| Iron | *0.31 mg* | *0.22 mg* |
| Calcium | *6.0 mg* | *11 mg* |
| Sodium | *1 mg* | *2 mg* |

**c)** How many times more calcium is there in a serving of apple than in a serving of banana?

**8.1 Warm Up, page 424**

**1. a)** $\frac{1}{2}$ **b)** $-\frac{3}{8}$

**2. a)** $\frac{11}{4}$ **b)** $-\frac{11}{6}$

**3. a)** $\frac{3}{5}$ **b)** 2

**4. a)** 3.5 **b)** –15.9

**5. a)** multiply by 3 **b)** add –5 **c)** divide by 5 **d)** subtract 6

**8.1 Solving Equations: $ax = b$, $\frac{x}{a} = b$ , $\frac{a}{x} = b$ , pages 425–439**

**Working Example 1a): Show You Know**

$x = \frac{-2}{9}$

**Working Example 1b): Show You Know**

$x = \frac{5}{3}$ or $1\frac{2}{3}$

**Working Example 1c): Show You Know**

$y = \frac{-7}{5}$ or $-1\frac{2}{5}$

**Working Example 2a): Show You Know**

$k = -0.62$

**Working Example 2b): Show You Know**

$u = 1.04$

**Working Example 3: Show You Know**

It would take 2.13 h.

**Working Example 4: Show You Know**

$49.99

**Communicate the Ideas**

**1. a)** NO. To isolate $y$, you need to multiply both sides by 2.

**b)** $2 \times \frac{y}{2} = 2 \times \frac{5}{3}$

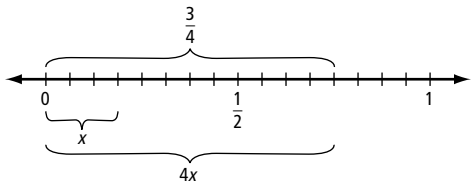
$y = \frac{10}{3}$

**2.** Answers will vary. Example: Ming could round to the nearest hundredth.

**Practise**

**3. a)** $3x = 0.27$ **b)** $x = 0.09$

**4.** $x = \frac{3}{16}$




**5. a)** $v = -\frac{5}{12}$ **b)** $a = -\frac{16}{15}$ or $-1\frac{1}{15}$

**6. a)** $c = 3.2$ **b)** $x = -0.6$ **c)** $e = 1.7$

**7. a)** $n = 2.85$ **b)** $x = -0.55$

**Apply**

**8. a)** Pablo drove 318.75 km. **b)** Sheila's trip took 1.6 h.

**9.** Equation: $25.8 = 4s$; The side length is 6.45 cm.

**10.** The diameter is 17.4 cm.

**11.** The sale price is $999.96.

**Math Link**

**a)** 0.4 **b)** 30 **c)** Total mass of iron = $0.4n$ **d)** 4.5 figs

**8.2 Warm Up, page 440**

**1. a)** $\frac{1}{2}$ **b)** $-\frac{7}{4}$ or $-1\frac{3}{4}$

**2. a)** $-\frac{2}{8}$ or $-\frac{1}{4}$ **b)** $\frac{9}{12}$ or $\frac{3}{4}$

**3. a)** $2m + 24$ **b)** $\frac{1}{4}x$ or $\frac{x}{4}$ or $0.25x$ **c)** $y - 5$

**d)** $\frac{1}{2}n - 5$ or $0.5n - 5$ or $\frac{n}{2} - 5$

**8.2 Solving Equations: $ax + b = c$, $\frac{x}{a} + b = c$, pages 441–456**

**Working Example 1: Show You Know**

**a)** $y = \frac{1}{8}$ **b)** $n = \frac{25}{4}$ or $6\frac{1}{4}$

**Working Example 2: Show You Know**

$h = -2.4$

**Working Example 3: Show You Know**

Colin can make 370 min of long-distance calls per month.

**Communicate the Ideas**

**1.** NO. Ryan did not divide 0.3 by 2.

**2.** Answers may vary. Example: NO. The lowest common multiple of 2, 9 and 6 is 18.

**Practise**

**3.** $x = \frac{3}{4}$

**4.** $2x + 0.15 = 0.55$; $x = 0.20$

**5. a)** $y = \frac{1}{4}$ **b)** $d = \frac{7}{8}$ **c)** $n = -3$

**6.** $x = -\frac{3}{16}$

**7.** $h = \frac{5}{24}$

**8. a)** $x = -2.1$ **b)** $r = 6.984$ **c)** $v = -0.116$ **d)** $x = 3.2$

**Apply**

**9.** There are 4 toppings on the pizza.

**10.** Hiroshi drove 168 km.

**11.** Marc's weekly allowance is $35.

**Math Link**

**a)** $0.21 = 4b + 0.01$ **b)** $b = 0.05$ **c)** Answers will vary.

**8.3 Warm Up, page 457**

**1. a)** $18 = 8d + 9$ **b)** $2(t - 1) = 15$ or $2t - 2 = 15$

**2. a)** $\frac{11}{12}$ **b)** $-\frac{3}{4}$

**3. a)** $3x - 3.6$ **b)** $-4m - 9.2$

**8.3 Solving Equations: *a*(*x* + *b*) = *c*, pages 458–467**

**Working Example 1: Show You Know**

**a)** $e = 2.7$ **b)** $c = -\frac{19}{2}$ or $-9\frac{1}{2}$

**Working Example 2: Show You Know**

The low temperature is –4.3 °C.

**Communicate the Ideas**

**1. a)** Answers may vary. Example: He multiplied the 4.5 by 2. Only the left side should be multiplied by 2. **b)** $n = 0.75$

**2. a)** *Cal's method:*

$$3k - 12.9 = -2.7$$
$$3k - 12.9 + 12.9 = -2.7 + 12.9$$
$$3k = 10.2$$
$$\frac{3k}{3} = \frac{10.2}{3}$$
$$k = 3.4$$

*Tyana's method:*

$$\frac{3(k - 4.3)}{3} = \frac{-2.7}{3}$$
$$k - 4.3 = -0.9$$
$$k - 4.3 + 4.3 = -0.9 + 4.3$$
$$k = 3.4$$

**b)** Answers may vary. Example: I prefer Tyana's method because it takes fewer steps.

**Practise**

**3. a)** $x = 2.3$ **b)** $a = -5.7$

**4. a)** $r = -0.22$ **b)** $c = 3.45$

**5. a)** $u = 11.36$ **b)** $m = -3.93$

**6. a)** $n = -\frac{5}{2}$ **b)** $x = 12$

**7. a)** $p = \frac{15}{4}$ **b)** $e = -\frac{13}{2}$

**8. a)** $x = 3.4$ **b)** $k = -63.6$

**Apply**

**9.** The other number is –74.6.

**10.** The value of $x$ is 6.76.

**11.** The high temperature was 3.3 °C.

**12.** The regular price of each jar was $2.99.

**Math Link**

**a)** $2(c + 0.1) = 1.4$

**b)** *Method 1:*

$$2(c + 0.1) = 1.4$$
$$2c + 0.2 = 1.4$$
$$2c + 0.2 - 0.2 = 1.4 - 0.2$$
$$2c = 1.2$$
$$\frac{2c}{2} = \frac{1.2}{2}$$
$$c = 0.6$$

*Method 2:*

$$2(c + 0.1) = 1.4$$
$$\frac{2(c + 0.1)}{2} = \frac{1.4}{2}$$
$$c + 0.1 = 0.7$$
$$c + 0.1 - 0.1 = 0.7 - 0.1$$
$$c = 0.6$$

**c)** Answers will vary: Example: Method 2. There are fewer steps.

**8.4 Warm Up, page 468**

**1. a)** 125¢ or $1.25 **b)** 81¢ or $0.81

**2. a)** $f = -3$ **b)** $m = 3.15$

**3. a)** $x = -\frac{6}{5}$ **b)** $x = 16$

**4. a)** $8.5b$ **b)** $0.1x$ **c)** $-1.7a$ **d)** $-1.5d$

**8.4 Solving Equations: *ax* = *b* + *cx*, *ax* + *b* = *cx* + *d*, *a*(*bx* + *c*) = *d*(*ex* + *f*), pages 469–481**

**Working Example 1: Show You Know**

| | Nickels | Quarters |
|---|---|---|
| **Value of Each Coin** | *0.05* | 0.25 |
| **Expression (Number of Coins)** | *q + 20* | *q* |
| **Total Value** | *0.05(q + 20)* | *0.25q* |

$q = 5$

**Working Example 2: Show You Know**

| | Internet Café A | Internet Café B |
|---|---|---|
| **Cost for 1 h** | *4* | 2 |
| **Cost for Printing *p* Pages** | *0.20p* | *0.25p* |

$p = 40$

**Working Example 3: Show You Know**

$f = -5$

**Communicate the Ideas**

**1.** $r = 6(2r + 1)$;

$$\frac{r}{2} = 3(r + 0.5)$$
$$2 \times \frac{r}{2} = 2 \times 3(r + 0.5)$$
$$r = 6(r + 0.5)$$
$$r = 6r + 3$$
$$r - 6r = 6r + 3 - 6r$$
$$-5r = 3$$
$$\frac{-5r}{5} = \frac{3}{-5}$$
$$r = -\frac{3}{5}$$

### Practise

**2.** $3x + 0.15 = 2x + 0.30$; $x = 0.15$

**3. a)** $x = 6.4$ **b)** $a = -0.8$ **c)** $u = 3$ **d)** $r = -2.55$

**4. a)** $p = -21$ **b)** $h = -\frac{5}{2}$

**5. a)** $q = 0.22$ **b)** $y = 0.75$

**6. a)** $x = \frac{5}{2}$ or 2.5 **b)** $m = -2$

### Apply

**7. a)** There are 19 nickels in the jar. **b)** $1.90

**8.** In 5 weeks they will have the same amount of money.

**9.** 13.68 square units each

### Math Link

**a)** $r = 2.5r - 0.87$ **b)** Answers will vary. **c)** $r = 0.58$ **d)** Answers will vary. Example: ISOLATING THE VARIABLE. It is easier when working with decimals.

### Graphic Organizer, page 482

**Use multiplication or division:**

$3x = \frac{2}{5}$ : divide both sides by 3; $\frac{a}{4} = \frac{2}{3}$ : multiply both sides by 4

**Use 2 operations:**

Subtract 0.05 from both sides. Divide both sides by 3.

**Group symbols:**

Multiply the 2 by $x$ and 0.25. Subtract 0.5 from both sides. Divide both sides by 2.

Or, Divide both sides by 2. Subtract 0.25 from both sides.

**Variables on both sides:**

Subtract $2b$ from both sides. Subtract 0.10 from both sides.

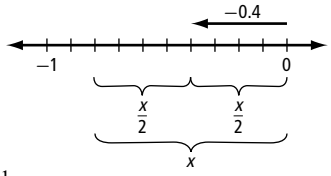
### Chapter 8 Review, pages 483–488

**1.** D; B; A; C; C

**2.** opposite operation; operations that undo other operations.

**3.** distributive property; $a(b + c) = ab + ac$

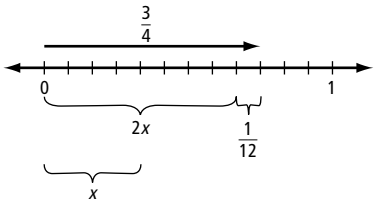
**4.** $x = -0.8$




**5. a)** $d = -\frac{1}{10}$ **b)** $y = 8.04$ **c)** $h = -17.5$ **d)** $u = 1.9$

**6. a)** The mass is 43.285 g. **b)** The volume is 12.5 $cm^3$.

**7.** $x = \frac{1}{3}$




**8. a)** $t = -14.56$ **b)** $x = 9.5$ **c)** $r = \frac{4}{3}$

**9.** The cost of each ticket was $34.95.

**10. a)** $e = -6.7$ **b)** $r = \frac{3}{2}$

**11.** The cost of each admission was $21.75.

**12. a)** $f = 1.75$ **b)** $v = -\frac{11}{6}$

**13. a)** 1.9 **b)** 25.2 units each.

### Key Word Builder, page 489

**Across**

**2.** solution **4.** variable **6.** distributive **8.** coefficient

**Down**

**1.** multiples **3.** constants **5.** operation **7.** equation

### Chapter 8 Practice Test, pages 490–492

**1.** D **2.** A **3.** B **4.** C

**5.** variable

**6.** –6.39

**7. a)** $a = -7$ **b)** $d = -0.8$

**8.** 9

**9. a)** The same amount of precipitation on a warm day would result in 1.55 cm of rain. **b)** 27 cm of snow.

**10. a)** –0.3 **b)** 10 units each

### Math Link: Wrap It Up!, pages 493–494

**a)** $0.76x = 3.8$; 5 servings **b)** 4.06 MJ **c)** 2 servings **d)** 3 servings **e)** 4 servings

### Challenge, page 495

Answers will vary.