LESSON 4.2

Name _____ Date _____

Practice B

For use with pages 179–183

Find the greatest common factor of the numbers.

1. 24, 60 **2.** 28, 70 **3.** 48, 80

4. 66, 71 **5.** 25, 42 **6.** 63, 49

Find the greatest common factor of the numbers. Then tell whether the numbers are relatively prime.

7. 22, 64 **8.** 26, 65 **9.** 44, 47

10. 36, 48 **11.** 51, 68 **12.** 11, 98

Find the greatest common factor of the monomials.

13. $14m^2$, $21m$ **14.** $34n$, $8n^2$ **15.** $16t^3$, $24t^2$

16. $6x$, $9x^2$, $18x^3$ **17.** $24y^2$, $6y^2$, $8y$ **18.** $15a$, $45a^2$, $35a^4$

Tell whether the numbers are relatively prime.

19. 210, 211 **20.** 62, 121 **21.** 81, 87

Find the greatest common factor of the monomials.

22. $32xy$, $20y^2$ **23.** $33pq$, $55p^2q^2$ **24.** $16abc^2$, $28abc$

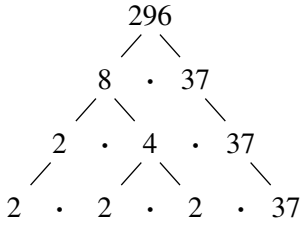
25. $52d^2e$, $12d^2f$ **26.** $12rst$, $42r^2s^3t^2$, rt^5 **27.** $9xy^2z$, $18y^3$, $6x$

28. A baseball league forms using a total of 12 coaches, 78 players, 24 baseball bats, and 96 baseballs. What is the greatest number of teams that can be formed that have equal numbers of coaches, players, baseball bats, and baseballs?

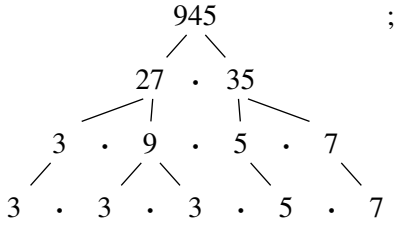
29. A food drive takes in a total of 63 cans of soup, 45 loaves of bread, 72 cans of spaghetti sauce, and 36 boxes of spaghetti. What is the greatest number of identical care packages that can be put together from the items obtained?

30. Two numbers are relatively prime. If the first number is multiplied by 3, the result is divisible by 6. Must the second number be an odd number? Explain your reasoning.

Lesson 4.1 *continued*

17. 

; $2^3 \cdot 37$

18. 

; $3^3 \cdot 5 \cdot 7$

19. $7 \cdot 7 \cdot s \cdot s \cdot s \cdot t$

20. $2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot y \cdot y \cdot z$

21. 1, 5, 11, 25, 55, 275

22. 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 300, 600

23. 1, 2, 3, 4, 6, 8, 12, 13, 24, 26, 39, 52, 78, 104, 156, 312 **24.** 1, 7, a, b, $7a$, $7b$, $7ab$

25. 1, 2, 5, 10, w, $2w$, $5w$, $10w$, w^2, $2w^2$, $5w^2$, $10w^2$

26. 1, 13, v, v^2, v^3, t, $13v$, $13v^2$, $13v^3$, $13t$, $13vt$, $13v^2t$, $13v^3t$, vt, v^2t, v^3t **27.** 2 groups of 48, 3 groups of 42, 4 groups of 24, 6 groups of 16, 8 groups of 12; 2 possibilities

28. a. 8 possible arrangements **b.** 1 possible arrangement **c.** 1 possible arrangement

Review for Mastery

1. 1, 2, 3, 6, 7, 14, 21, 42 **2.** 1, 19

3. 1, 3, 17, 51 **4.** 1, 3, 7, 21 **5.** composite; 3^5

6. prime **7.** composite; $2 \cdot 3 \cdot 13$

8. composite; 3^4

9. $2 \cdot 2 \cdot 2 \cdot 2 \cdot a \cdot a \cdot a \cdot a \cdot b$

10. $5 \cdot 5 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y$

11. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot r \cdot r \cdot r \cdot t \cdot t \cdot t$

12. $19 \cdot c \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d$

Problem Solving Workshop

1. $1 \cdot 36$; $2 \cdot 18$; $3 \cdot 12$; $4 \cdot 9$; $6 \cdot 6$

2. 1 panel × 36 panels; 2 panels × 18 panels; 3 panels × 12 panels; 4 panels × 9 panels; 6 panels × 6 panels; 9 panels × 4 panels; 12 panels × 3 panels; 18 panels × 2 panels; 36 panels × 1 panel

3. 3 ft × 144 ft; 6 ft × 72 ft; 9 ft × 48 ft; 12 ft × 36 ft; 18 ft × 24 ft; 27 ft × 16 ft; 36 ft × 12 ft; 54 ft × 8 ft; 108 ft × 4 ft

4. 9 ft × 48 ft; 12 ft × 36 ft; 18 ft × 24 ft; 27 ft × 16 ft; 36 ft × 12 ft

Challenge Practice

1. 1, 2, 3, 4, 6, 9, 11, 12, 18, 22, 33, 36, 44, 66, 99, 132, 198, 396 **2.** 1, 3, 5, 9, 15, 25, 27, 45, 75, 135, 225, 675 **3.** 1, 2, 4, 5, 7, 8, 10, 14, 20, 28, 35, 40, 49, 56, 70, 98, 140, 196, 245, 280, 392, 490, 980, 1960 **4.** 1, 2, 3, 6, m, $2m$, $3m$, $6m$, m^2, $2m^2$, $3m^2$, $6m^2$, m^3, $2m^3$, $3m^3$, $6m^3$, n, $2n$, $3n$, $6n$, mn, $2mn$, $3mn$, $6mn$, m^2n, $2m^2n$, $3m^2n$, $6m^2n$, m^3n, $2m^3n$, $3m^3n$, $6m^3n$ **5.** 1, 3, 5, 15, a, $3a$, $5a$, $15a$, a^2, $3a^2$, $5a^2$, $15a^2$, b, $3b$, $5b$, $15b$, ab, $3ab$, $5ab$, $15ab$, a^2b, $3a^2b$, $5a^2b$, $15a^2b$, b^2, $3b^2$, $5b^2$, $15b^2$, ab^2, $3ab^2$, $5ab^2$, $15ab^2$, a^2b^2, $3a^2b^2$, $5a^2b^2$, $15a^2b^2$

6. 1, 2, 3, 4, 6, 12, m, $2m$, $3m$, $4m$, $6m$, $12m$, n, $2n$, $3n$, $4n$, $6n$, $12n$, p, $2p$, $3p$, $4p$, $6p$, $12p$, mn, $2mn$, $3mn$, $4mn$, $6mn$, $12mn$, mp, $2mp$, $3mp$, $4mp$, $6mp$, $12mp$, np, $2np$, $3np$, $4np$, $6np$, $12np$, mnp, $2mnp$, $3mnp$, $4mnp$, $6mnp$, $12mnp$ **7.** 3, 7, 31, 127

8. 1, 2, 3, 4, 6, 8, and 12; *Sample examples:* 1, 2, 3, 4, 6, 8, 12, and 24 are all factors of 48. 1, 2, 3, 4, 6, 8, 12, and 24 are all factors of 72.

9. composite; $11 \cdot 13 \cdot 23$

Lesson 4.2

Practice A

1. 2, 3, or 6 **2.** *Sample answer:* 4 and 15

3. 8 **4.** 7 **5.** 7 **6.** 11 **7.** 6 **8.** 2 **9.** 4

10. 18 **11.** 14 **12.** 3; not relatively prime

13. 3; not relatively prime **14.** 1; relatively prime **15.** 1; relatively prime **16.** 13; not relatively prime **17.** 1; relatively prime

18. $3x$ **19.** 4 **20.** $16y$ **21.** $7r^2$ **22.** $9s^3$

23. $11z^2$ **24.** no **25.** yes **26.** no

27. a. $6 = 2 \cdot 3$; $12 = 2 \cdot 2 \cdot 3$; $4 = 2 \cdot 2$; $8 = 2 \cdot 2 \cdot 2$ **b.** The common prime factor is 2. **c.** 2 **28.** 6 fruit baskets

Practice B

1. 12 **2.** 14 **3.** 16 **4.** 1 **5.** 1 **6.** 7

7. 2; not relatively prime

8. 13; not relatively prime

Lesson 4.2 *continued*

9. 1; relatively prime
10. 12; not relatively prime
11. 17; not relatively prime
12. 1; relatively prime **13.** $7m$ **14.** $2n$
15. $8t^2$ **16.** $3x$ **17.** $2y$ **18.** $5a$
19. relatively prime **20.** relatively prime
21. not relatively prime **22.** $4y$ **23.** $11pq$
24. $4abc$ **25.** $4d^2$ **26.** rt **27.** 3
28. 6 teams **29.** 9 care packages
30. Yes; the first number times 3 is divisible by 6, so the first number is also divisible by 2. The second number cannot also be divisible by 2. So, it must be an odd number.

Practice C

1. 120 **2.** 110 **3.** 28 **4.** 23 **5.** 37 **6.** 3
7. 3; not relatively prime
8. 6; not relatively prime **9.** 1; relatively prime
10. 1; relatively prime
11. 23; not relatively prime
12. 1; relatively prime **13.** $9z^4$ **14.** $2r$
15. $22ab$ **16.** $5x$ **17.** 1 **18.** 19
19. relatively prime **20.** not relatively prime
21. relatively prime **22.** 2 **23.** 1 **24.** xz^2
25. $12rs^2t^2$ **26.** $55b^3c^5d^7$ **27.** $28q^2r^4s^4t^2$
28. 8; *Sample answer:* yes, this makes sense because the common factors of 64, 48, and 56 are 1, 2, 4, and 8. So, the boss must have wanted 2, 4, or 8 identical packages. Joe could make 4 identical packages by combining pairs of his 8 packages, or he could make 2 identical packages by combining 2 groups of 4 packages.
29. The second number is not a multiple of 2 or 3.
30. No; *Sample answer:* if 8 is a factor of the first number, then 2 is a factor of the first number. Because 2 is also a factor of 54, then 2 would be a common factor of the numbers. This cannot be true, because the GCF is 27, which does not have a factor of 2.

Review for Mastery

1. 27 **2.** 12 **3.** 7 **4.** 15
5. 3; not relatively prime
6. 17; not relatively prime
7. 1; relatively prime
8. 12; not relatively prime **9.** $25ab$ **10.** $6x$
11. $15y^4$ **12.** $3xy$

Challenge Practice

1. not relatively prime **2.** not relatively prime
3. relatively prime **4.** $4ab$ **5.** m **6.** w^2
7. *Sample answer:* 101, 102
8. *Sample answer:* 150, 210
9. *Sample answer:* b and c can be, but do not have to be relatively prime. Consider $a = 6$, $b = 5$, and $c = 35$; b and c are not relatively prime. Consider $a = 3$, $b = 5$, $c = 2$; b and c are relatively prime.

Lesson 4.3

Practice A

1. yes **2.** no **3.** no
4. *Sample answer:* $\frac{6}{8}, \frac{9}{12}$
5. *Sample answer:* $\frac{6}{16}, \frac{9}{24}$
6. *Sample answer:* $\frac{1}{2}, \frac{12}{24}$
7. *Sample answer:* $\frac{1}{3}, \frac{14}{42}$
8. *Sample answer:* $\frac{1}{5}, \frac{4}{20}$
9. *Sample answer:* $\frac{2}{3}, \frac{8}{12}$ **10.** $\frac{1}{2}$ **11.** $\frac{3}{4}$
12. $\frac{7}{8}$ **13.** $\frac{2}{3}$ **14.** $\frac{4}{5}$ **15.** $\frac{7}{9}$ **16.** $\frac{4}{9}$
17. a. $\frac{3}{5}$ **b.** $\frac{2}{5}$ **18.** $\frac{xy^3}{3}$ **19.** $\frac{2a^3}{9}$ **20.** $\frac{16}{9s^2t}$
21. $\frac{2}{v}$ **22.** $\frac{61g}{4h^2}$ **23.** $\frac{10n^2}{7}$ **24.** $\frac{5}{8}, \frac{7}{8}$; no
25. $\frac{5}{7}, \frac{5}{7}$; yes **26.** $\frac{7}{9}, \frac{7}{9}$; yes

Practice B

1. no **2.** yes **3.** no
4. *Sample answer:* $\frac{10}{28}, \frac{15}{42}$
5. *Sample answer:* $\frac{14}{32}, \frac{21}{48}$
6. *Sample answer:* $\frac{9}{10}, \frac{27}{30}$
7. *Sample answer:* $\frac{11}{17}, \frac{33}{51}$
8. *Sample answer:* $\frac{2}{5}, \frac{28}{70}$
9. *Sample answer:* $\frac{6}{23}, \frac{24}{92}$ **10.** $\frac{7}{8}$