6th Grade Unit 1: Lesson 2-1

Check Your Understanding (p. 29):

1. (a) 2×7

    (b) $2 \times 3 \times 5$

    (c) $3 \times 3 \times 3$

    (d) 2×19

    (e) $2 \times 2 \times 3 \times 7$

    (f) 1×41

    (g) $2 \times 2 \times 5 \times 5$

    (h) 7×11

    (i) $2 \times 2 \times 3 \times 3 \times 5$

2. Every even number after 2 is divisible by 2.

3. Every number with a 5 in the ones place is divisible by 5.

4. 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

5. Answers may vary. Sample answer: All of the numbers in a prime factorization must be natural numbers. Since the product of any two natural numbers is also a natural number, the product of any primes in a prime factorization cannot be a decimal.

Lesson 2-1 Practice (p. 29):

6. 93 is not prime. $93 = 3 \times 31$

7. Possible answers:

    (a) $14 = 19 - 5$

    (b) $18 = 37 - 19$

    (c) $22 = 41 - 19$

8. Possible answers:

    (a) $16 = 3 + 13$

    (b) $26 = 7 + 19$

    (c) $34 = 3 + 31$

Activity 2 Practice Lesson 2-1 (p. 33):

1. C

2. D

3. A prime number is a natural number that has exactly two factors, itself and 1. A composite number is a natural number that has more than two factors.

4. 83, 89

5. 40, 42, 44, 45, 46, 48, 49, 50

6. (a) Answers may vary. Even numbers all have a factor of 2. Since 59 does not have a factor of 2, it cannot be divisible by an even number.

    (b) No; Answers may vary. If 59 is divisible by any test number greater than 29, the quotient would be a natural number less than 29. She has already found that 59 is not divisible by any number less than 29, however, so she can conclude that 59 is prime.

7. No; Answers may vary. If the number were divisible by 14, it would also be visible by the prime factors of 14, 2 and 7. Since it is not divisible by 7, it cannot be divisible by 14.

8. (a) $2 \times 3 \times 5$ (b) 3×11

    (c) $2 \times 13 \times 13 \ or \ 2 \times 13^2$

    (d) $2 \times 2 \times 2 \times 3 \times 3 \ or \ 2^3 \times 3^2$

    (e) 5×13 (f) $2^2 \times 19$

9. Composite; Answers may vary. The divisibility rule for 3 shows that 147 is divisible by 3. $1 + 4 + 7 = 12$. Since 12 is divisible by 3, then 147 is divisible by 3.

10. No. 4 is not a prime number.

11. 13, 26, 39, 52, 65, 78, 91

12. (a) 13 bricks

    (b) It is a square because there are 13 rows with 13 bricks in each row.

13. (a) $2 \times 2 \times 3 \times 11$

    (b) Answers may vary. 132 is divisible by 2 since it is even: $132 \div 2 = 66$; 66 is divisible by 2 for the same reason: $66 \div 2 = 33$; 33 is divisible by 3 since the sum of its digits, 6, is divisible by 3; $33 \div 3 = 11$. 11 is prime.

14. (a) $2 \times 2 \times 3 \times 3 \times 5 \ \ or \ 2^2 \times 3^2 \times 5$

    (b) Any number with zero in the ones place is divisible by 2, 5 and 10.

15. No; every number has one as a factor. To decide whether the number is prime or composite, you must know what its other factors are.

16. (a) $5 + 5$ (b) $11 + 11$

    (c) $13 + 17$ (d) $19 + 31$

17. (a) $13 - 11$ (b) $11 - 3$

    (c) $19 - 5$ (d) $19 - 3$