

LESSON 60

1. Let x = first even integer

$x + 2$ = second even integer

$x + 4$ = third even integer

Sum = 12, so $x + (x + 2) + (x + 4) = 12$.

Solve for x , and you get $x = 2$.

The numbers are 2, 4 and 6.

2. Let x = width of the rectangle

$2x$ = length of the rectangle

Perimeter = $2(\text{width} + \text{length}) = 18$,

so $2(x + 2x) = 18$.

Solve for x , and you get $x = 3$.

The rectangle is 3 feet by 6 feet.

3. $c^2 = 3^2 + 4^2$

$c^2 = 25$

$c = \pm 5$

$c > 0$, so $c = 5$.

The hypotenuse is 5 in.

4. $13^2 = 5^2 + b^2$

$b^2 = 144$

$b = \pm 12$

$b > 0$, so $b = 12$.

The other leg is 12 cm.

5. Let x = smaller positive integer

$x + 3$ = larger positive integer

Product = 40, so $x(x + 3) = 40$.

Solve for x , and you get $x = 5$ and $x = -8$.

The two positive integers are 5 and 8.

6. Let x = side length of the square

By The Pythagorean Theorem, $x^2 + x^2 = (5\sqrt{2})^2$.

Solve for x , and you get $x = 5$ and $x = -5$.

The length of each side is 5 cm.

7. Let x = width of the rectangle

$x + 4$ = length of the rectangle

Area = (width)(length) = 96, so $x(x + 4) = 96$.

Solve for x , and you get $x = 8$ and $x = -12$.

The rectangle is 8 cm by 12 cm.

8. Let x = smaller positive integer

$x + 1$ = larger positive integer

Sum of squares = 61, so $x^2 + (x + 1)^2 = 61$.

Solve for x , and you get $x = 5$ and $x = -6$.

The two positive integers are 5 and 6.

9. Let x = first positive integer

$10 - x$ = second positive integer

Sum of squares = 58, so $x^2 + (10 - x)^2 = 58$.

Solve for x , and you get $x = 3$ and $x = 7$.

The two positive integers are 3 and 7.

10. Let x = smaller positive integer

$x + 3$ = larger positive integer

Smaller + square of larger = 39, $x + (x + 3)^2 = 39$

Solve for x , and you get $x = 3$ and $x = -10$.

The two positive integers are 3 and 6.

11. Let x = length of the rectangle

By The Pythagorean Theorem, $5^2 + x^2 = 13^2$.

Solve for x , and you get $x = 12$ and $x = -12$.

The height of the rectangle is 12 cm.

12. Let x = hypotenuse of the triangle

$x - 1$ = first leg of the triangle

$x - 2$ = second leg of the triangle

By The Pythagorean Theorem,

$$(x - 1)^2 + (x - 2)^2 = x^2$$

Solve for x , and you get $x = 1$ and $x = 5$.

The dimensions are 5 cm, 4 cm, and 3 cm.

13. Let x = width of the rectangle

$3x - 2$ = length of the rectangle

Area = (width)(length) = 65, so $x(3x - 2) = 65$.

Solve for x , and you get $x = 5$ and $x = -13/3$.

The dimensions are 5 cm and 13 cm.

14. Perimeter = $2(\text{width} + \text{length}) = 36$,

so width + length = 18.

Let x = width of the rectangle

$18 - x$ = length of the rectangle

Area = (width)(length) = 80, so $x(18 - x) = 80$.

Solve for x , and you get $x = 8$ and $x = 10$.

The dimensions are 8 in and 10 in.

15. Let x = legs of the triangle

By The Pythagorean Theorem, $x^2 + x^2 = (4\sqrt{2})^2$.

Solve for x , and you get $x = 4$ and $x = -4$.

The perimeter is $8 + 4\sqrt{2}$ feet.

16. Let x = width of the strip

$6 + 2x$ = width of the new rectangle

$4 + 2x$ = length of the new rectangle

New area = original area + 24,

so $(6 + 2x)(4 + 2x) = 6(4) + 24$.

Solve for x , and you get $x = 1$ and $x = -6$.

The width of the strip is 1 cm.

17. x = distance traveled by car B

$x + 10$ = distance between
the two cars

By The Pythagorean Theorem,

$$20^2 + x^2 = (x + 10)^2$$

Solve for x , and you get $x = 15$.

Car B traveled 15 miles.

