

Worksheet/3-13 odd

Warm up:

If a number is added to its square, the result is 90. Find the number.

$$\begin{array}{r} x^2 + x = 90 \\ -90 \quad -90 \\ \hline x^2 + x - 90 = 0 \\ (x - 9)(x + 10) = 0 \end{array}$$

$x = 9, -10$

9 or -10

HW Solutions

$$\begin{array}{r} Q0 \quad 33x^2 = -22x \\ \quad \quad +22x \quad \quad +22x \\ \hline \end{array}$$

$$33x^2 + 22x = 0$$

$$\underline{11x(3x+2)} = 0$$

$$x = 0, -\frac{2}{3}$$

Q8

$$\begin{array}{r}
 -4x^2 + 19x = -30 \\
 +4x^2 - 19x \quad -19x + 4x^2 \\
 \hline
 \end{array}$$

$$0 = 4x^2 - 19x - 30$$

$$0 = (4x + 5)(x - 6)$$

$$x = -\frac{5}{4}, 6$$

1, 30
2, 15
3, 10
5, 6

$$\textcircled{24} \quad -3x^2 + 26x = 16$$

$$0 = 3x^2 - 26x + 16$$

$$0 = (3x - 2)(x - 8)$$

$$x = \frac{2}{3}, 8$$

(59)

$$\frac{15a^2}{15} = \frac{60a}{15}$$

$$\begin{array}{r} a^2 = 4a \\ -4a \quad -4a \\ \hline \end{array}$$

$$a^2 - 4a = 0$$

$$a(a-4) = 0$$

$$a = 0, 4$$

$$\textcircled{55} \quad \underline{a(a-9)} = 0$$

$$a = 0, 9$$

$$\textcircled{5} \quad 2x^2 + 9x + 9 = 0$$

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

$$x = -\frac{3}{2}, -3$$

$$\begin{array}{l} 19 \\ 3, 3 \end{array}$$

$$\textcircled{6}$$

$$3x^2 + 17x + 20 = 0$$

$$(3x + 5)(x + 4) = 0$$

$$x = -\frac{5}{3}, -4$$

$$\begin{aligned} \text{Q58} \quad & 8b^2 - 12b = 0 \\ & 4b(2b - 3) = 0 \\ & b = 0, \frac{3}{2} \end{aligned}$$

Q7

$$-3x^2 - 5x = -2$$

$$0 = 3x^2 + 5x - 2$$

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

$$x = -\frac{1}{3}, 2$$

Find two consecutive negative odd integers whose product is 255.

-17 and -15

$$x(x+2) = 255$$

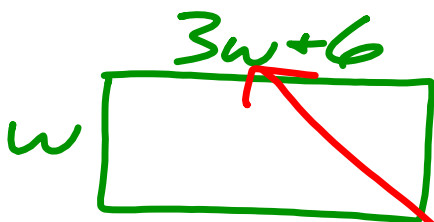
$$x^2 + 2x = 255$$

$$x^2 + 2x - 255 = 0$$

$$(x + 17)(x - 15) = 0$$

$$x = -17, \cancel{15}$$

The length of a rectangle is 6 cm more than three times its width. The area of the rectangle is 144 cm^2 . Find the dimensions of the rectangle.



$6 \text{ cm} \times 24 \text{ cm}$

$$w(3w+6) = 144$$

$$3w^2 + 6w = 144$$

$$-144 \quad -144$$

$$3w^2 + 6w - 144 = 0$$

$$\frac{\quad}{3} \quad \frac{\quad}{3}$$

$$w^2 + 2w - 48 = 0$$

$$(w+8)(w-6) = 0$$

$$w = -8, 6$$

A decorator plans to place a rug in a 9m by 12m room so that a uniform strip of flooring around the rug will remain uncovered. How wide will this strip be if the area of the rug is to be half the area of the room?

$$(9-2w)(12-2w) = 9 \cdot 12 \cdot 0.5$$

$$108 - 42w + 4w^2 = 54$$

$$\frac{4w^2 - 42w + 54 = 0}{2}$$

$$2w^2 - 21w + 27 = 0$$

$$(2w - 3)(w - 9) = 0$$

$$w = \frac{3}{2}, 9$$



1.5m

- 1) Find two consecutive negative integers whose product is 132.
- 2) The difference between the squares of two positive consecutive integers is 25. Find the integers.
- 3) The sum of two numbers is 18 and the sum of their squares is 164. Find the numbers.
- 4) The length of a rectangle is 4 cm longer than twice the width. The area is 96 cm^2 . Find the dimensions.
- 5) A rectangle has perimeter 48 m and area 135 m^2 . Find the dimensions.

1) Find two consecutive negative integers whose product is 132.

$$x(x+1) = 132$$

$$x^2 + x = 132$$

$$x^2 + x - 132 = 0$$

$$(x+12)(x-11) = 0$$

$$x = -12, \cancel{11}$$

$$\textcircled{-12 \text{ and } -11}$$

2) The difference between the squares of two positive consecutive integers is 25. Find the integers.

$$(x+1)^2 - x^2 = 25$$

$$\cancel{x^2} + 2x + 1 - \cancel{x^2} = 25$$

$$\begin{array}{r} 2x = 24 \\ \hline x = 12 \end{array}$$

12 and 13

3) The sum of two numbers is 18 and the sum of their squares is 164. Find the numbers.

$$x^2 + (18 - x)^2 = 164$$

4) The length of a rectangle is 4 cm longer than twice the width. The area is 96 cm^2 . Find the dimensions.



5) A rectangle has perimeter 48 m and area 135 m^2 . Find the dimensions.

