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7.6 Notetaking with Vocabulary

I can factor $ax^2 + bx + c$.

In your own words, write the meaning of each vocabulary term.

polynomial – a monomial or a bunch of monomials added together

greatest common factor (GCF) – the largest monomial that divides evenly into all terms in a polynomial

Zero-Product Property – if $a \cdot b = 0$ then $a = 0$ or $b = 0$

	Factor	Solve
answer	( )	=

Notes: Steps to Factoring $ax^2 + bx + c$

1. Put the poly in standard form.
2. Find the GCF if there is one + factor it out.
   Is the leading term negative? Pull out negative.
3. Is poly in $ax^2 + bx + c$ form? ← deg. 2
   $ax^2 + bx$ ← $c = 0$
   $ax^2 + c$ ← $b = 0$
   Use a·c method.
   - if $a = 1$ # from ac method go in parentheses
   - if $a \neq 1$ use the box

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7.6 Notetaking with Vocabulary (continued)

Practice

In Exercises 1–7, factor the polynomial.

1. $\frac{2c^2}{2} - \frac{14c}{2} - \frac{36}{2}$

$2(c^2 - 7c - 18)$

$a=1 \quad b=-7 \quad c=-18$

$\frac{-9}{} \cdot \frac{2}{} = -18$ (a·c)

$\frac{-9}{} + \frac{2}{} = -7$ (b)

$2(c-9)(c+2)$

2. $4a^2 + 8a - 140$

3. $3q^2 + 30q + 27$

4. $6k^2 - 11k + 4$

$a=6 \quad b=-11 \quad c=4$

$\frac{-8}{} \cdot \frac{-3}{} = 24$ (a·c)

$\frac{-8}{} + \frac{-3}{} = -11$ (b)

	3k	-4
2k	$6k^2$	-8k
-1	-3k	4k

$(2k-1)(3k-4)$

5. $12g^2 - 37g + 28$

$a=12 \quad b=-37 \quad c=28$

$\frac{-16}{} \cdot \frac{-21}{} = 336$ (a·c) $\quad \frac{-16}{} + \frac{-21}{} = -37$ (b)

$(4g-7)(3g-4)$

	4g	-7
3g	$12g^2$	-21g
-4	-16g	28

336
-1, -336
-2, -168
-3, -112
-4, -84
-6, -56
-7, -48
-8, -42
-12, -28
-14, -24
-16, -21

6. $\frac{-12b^2}{-1} + \frac{5b}{-1} + \frac{2}{-1}$

$-1(12b^2 - 5b - 2)$

$a=12 \quad b=-5 \quad c=-2$

$\frac{-8}{} \cdot \frac{3}{} = -24$

$\frac{-8}{} + \frac{3}{} = -5$

	3b	-2
4b	$12b^2$	-8b
1	3b	-2

$-1(4b+1)(3b-2)$

7. $-8x^2 + 14x - 5$

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7.6 Notetaking with Vocabulary (continued)

8. The length of a rectangular shaped park is $(3x + 5)$ miles. The width is $(2x + 8)$ miles. The area of the park is 360 square miles. What are the dimensions of the park?

$A = bh = lw$

$360 = (3x+5)(2x+8)$

$360 = 6x^2 + 24x + 10x + 40$

$360 = 6x^2 + 34x + 40$

$-360 \quad -360$

$0 = 6x^2 + 34x - 320$

$0 = 2(3x^2 + 17x - 160)$

$0 = 2(x-5)(3x+32)$

$x - 5 = 0 \quad 3x + 32 = 0$

$x = 5$ or $3x = -32$

$x = \frac{-32}{3}$

Aside work

$a = 3 \quad b = 17 \quad c = -160$

$-15 \cdot 32 = -480$

$-15 + 32 = 17$

	x	-5
3x	$3x^2$	-15x
32	32x	-160

-480
-1, 480
-10, 48
-20, 24
-15, 32

$2 \cdot 5 + 8 = 18$

$A = 360$ $2x + 8$

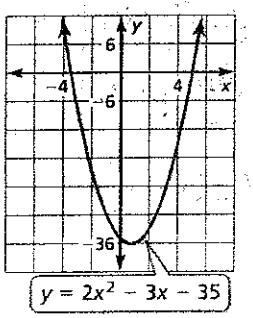
$3x + 5$

$3 \cdot 5 + 5 = 20$

The dimensions of the park are 18 miles by 20 miles.

9. The sum of two numbers is 8. The sum of the squares of the two numbers is 34. What are the two numbers?

10. Find the x-coordinates of the points where the graph crosses the x-axis.



Find the x-int... let $y = 0$

$0 = 2x^2 - 3x - 35$

$a = 2 \quad b = -3 \quad c = -35$

$-10 \cdot 7 = -70$

$-10 + 7 = -3$

$0 = (2x+7)(x-5)$

$2x + 7 = 0 \quad x - 5 = 0$

$2x = 7 \quad x = 5$

$x = \frac{7}{2}$

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

	x	-5
2x	$2x^2$	-10x
7	7x	-35

The x-coordinates of the points where the graph crosses the x-axis are $x = 3.5$ and $x = 5$.