

Name: _____
 Date: _____
 Class: _____

Algebra
 Unit 7
 HW 7-6

1) Factor: $12x^2 - 31x + 20$

~~Answer~~

$$x^2 - 31x + 240 \rightarrow \text{same sign}$$

$$(x - 15)(x - 14)$$

$$(4x - 5)(3x - 4)$$

same sign

$$+240$$

| | |
|---|-----|
| 1 | 240 |
|---|-----|

| | |
|---|-----|
| 2 | 120 |
|---|-----|

| | |
|---|----|
| 3 | 80 |
|---|----|

| | |
|---|----|
| 4 | 60 |
|---|----|

| | |
|---|----|
| 6 | 40 |
|---|----|

| | |
|---|----|
| 8 | 30 |
|---|----|

| | |
|----|----|
| 12 | 20 |
|----|----|

| | |
|-----------------|--|
| -15 + -16 = -31 | |
| Total -31 | |

2) Factor: $7x^2 + 11x - 6$

$$x^2 + 11x - 42$$

diff signs
-42

$$(x - 3)(x + 14)$$

| | |
|--------------|----|
| 1 | 42 |
| 2 | 21 |
| -3 + 14 = 11 | |
| 6 | 7 |

$$(7x - 3)(x + 2)$$

total +11

3) Factor: $11x^2 - 10x - 1$

$$x^2 - 10x - 11$$

diff signs
-11

$$(x - 11)(x + 1)$$

| | |
|---------------|--|
| 1 + -11 = -10 | |
|---------------|--|

Total -10

$$(x - 1)(11x + 1)$$

4) If a rectangle has an area represented by $32x^2 + 20x - 3$ what could represent the length and width?

$$32x^2 + 20x - 3 = l \cdot w$$

$$x^2 + 20x - 96$$

diff signs
-96

$$(x - 4)(x + 24)$$

| | |
|---|----|
| 1 | 96 |
|---|----|

| | |
|---|----|
| 2 | 48 |
|---|----|

| | |
|---|----|
| 3 | 32 |
|---|----|

| | |
|--------------|--|
| -4 + 24 = 20 | |
|--------------|--|

$$(8x - 1)(4x + 3)$$

| | |
|---|----|
| 6 | 16 |
|---|----|

| | |
|---|----|
| 8 | 12 |
|---|----|

total +20

↑ ↑
 l w

5) Factor: $x^2 - 21x - 442$

$$(x+13)(x-34)$$

dif signs

$$1 \quad 442$$

$$2 \quad 221$$

$$13 + -34 = -21$$

$$17 \quad 26$$

$$\text{total } -21$$

6) Factor: $\frac{1}{9}x^2 - 144$

$$\left(\frac{1}{3}x - 12\right)\left(\frac{1}{3}x + 12\right)$$

7) Factor: $2x^3 - 2x$

CCF $\rightarrow 2x$

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

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

8) Factor: $x^4 - 16$

$$(x^2 - 4)(x^2 + 4)$$

$$(x-2)(x+2)(x^2 + 4)$$

9) Factor: $x^8 - 1296$

$$(x^4 - 36)(x^4 + 36)$$

$$(x^2 - 6)(x^2 + 6)(x^4 - 36)$$