

Polynomial & Factors Quiz 2

Name: _____

April 12, 2013

1. Finish the questions by writing all the other ways to multiply to equal

a) 36

= 1 x 36

= 2 x 18

= 3 x 12

= 4 x 9

= 6 x 6

b) 40

= 1 x 40

= 2 x 20

= 4 x 10

= 5 x 8

2

2. Find two numbers that:

a) multiply to equal +18 and add to equal +11

$$\begin{array}{l}
 1 \times 18 \\
 \boxed{2 \times 9} \longrightarrow 2, 9 \\
 3 \times 6
 \end{array}$$

b) multiply to equal 30 and add to equal +17

$$\begin{array}{l}
 1 \times 30 \\
 \boxed{2 \times 15} \longrightarrow 2, 15 \\
 3 \times 10 \\
 5 \times 6
 \end{array}$$

3

c) multiply to equal -20 and add to equal -8

$$\begin{array}{l}
 1 \times 20 \\
 \boxed{2 \times 10} \longrightarrow -10, 2 \\
 4 \times 5
 \end{array}$$

3. Multiply:

a) $(3x+5)(x+2)$

= $3x^2 + 6x + 5x + 10$

= $3x^2 + 11x + 10$

3

	x	$+2$
$3x$	$3x^2$	$6x$
5	$5x$	10

b) $5(2x-1)(3x+2)$

= $5(6x^2 + 4x - 3x - 2)$

= $5(6x^2 + x - 2)$

~~= 5(6x^2 + x - 2)~~ = $30x^2 + 5x - 10$

	$2x$	-1
$3x$	$6x^2$	$-3x$
2	$4x$	-2

4. Kevin made a mistake in each question. Identify his mistake and find the correct answer:

a) $(x+5)^2 = x^2 + 25$

need to multiply binomials

$(x+5)(x+5)$

$= x^2 + 5x + 5x + 25$

$= x^2 + 10x + 25$

(3)

b) $6x^2 + 19x + 8 = (x+3)(x+16)$

yes to multiply $y = 48$

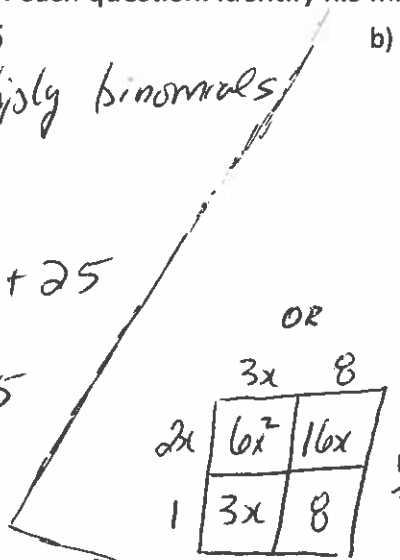
$\text{add} = \frac{19}{16, 3}$

but need to factor $6x^2$ and 8 ...

$6x^2 + 3x + 16x + 8$

$= 3x(2x+1) + 8(2x+1)$

$= (2x+1)(3x+8)$



5. Factor completely:

a) $x^2 + 6x + 8$

$= (x+4)(x+2)$

$\text{mult} = 8$
 $\text{add} = \frac{6}{4, 2}$

b) $x^2 + 16x + 28$

$= (x+14)(x+2)$

$\text{mult} = 28$
 $\text{add} = \frac{16}{14, 2}$

(6)

c) $5x^2 + 27x + 10$

	x	5
$5x$	$5x^2$	$25x$
2	$2x$	10

OR

$= 5x^2 + 25x + 2x + 10$

$= 5x(x+5) + 2(x+5)$

$= (x+5)(5x+2)$

$\text{mult} = 50$
 $\text{add} = \frac{27}{2, 25}$

d) $4x^3 + 28x^2 + 40x$

$= 4x(x^2 + 7x + 10)$

$= 4x(x+5)(x+2)$

$\text{mult} = 10$
 $\text{add} = \frac{7}{5, 2}$

6. Factor completely:

a) $9x^2 - 100$

$$(3x)^2 - (10)^2$$

$$= (3x+10)(3x-10)$$

b) $36x^2 - 25$

$$(6x)^2 - (5)^2$$

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

c) $6x^2 - 24$

$$= 6(x^2 - 4)$$

$$= 6(x+2)(x-2)$$

(3)

7. Factor:

a) $9x^2 + 20x + 4$

mult = 36
add = 20
2, 18

$9x^2$	$18x$
$2x$	4

OR $(x + \frac{2}{9})(x + \frac{18}{9})$

OR

$$9x^2 + 18x + 2x + 4$$

$$= 9x(x+2) + 2(x+2)$$

$$= (x+2)(9x+2)$$

(6)

b) $36x^2 + 5x - 1$

mult = -36
add = +5
9, -4

$36x^2$	$9x$
$-4x$	-1

OR $x^2 + 5x - 36$
 $(x+9)(x-4)$
36 36

OR

$$36x^2 + 9x - 4x - 1$$

$$= 9x(4x+1) - 1(4x+1)$$

$$= (4x+1)(9x-1)$$

c) $10x^2 - 3x - 4$

mult = -40
add = -3
-8, 5

$$x^2 - 3x - 40$$

$$(x - \frac{8}{10})(x + \frac{5}{10})$$

$$(x - \frac{4}{5})(x + \frac{1}{2})$$

OR

$10x^2$	$5x$
$-8x$	-4

$$10x^2 - 8x + 5x - 4$$

$$2x(5x-4) + 1(5x-4)$$

$$= (5x-4)(2x+1)$$

d) $8x^2 - 14x + 5$

mult = 40
add = -14
-10, -4

$8x^2$	$-4x$
$-10x$	5

$$x^2 - 14x + 40$$

$$(x - \frac{10}{8})(x - \frac{4}{8})$$

$$(x - \frac{5}{4})(x - \frac{1}{2})$$

$$8x^2 - 4x - 10x + 5$$

$$4x(2x-1) - 5(2x-1)$$

$$(2x-1)(4x-5)$$

8. Factor completely:

a) $16x^2 + 40x + 25$

$16x^2$	$20x$
$20x$	25

mult = 400
add = 40
20, 20

$$\begin{aligned} & 16x^2 + 20x + 20x + 25 \\ &= 4x(4x+5) + 5(4x+5) \\ &= \boxed{(4x+5)(4x+5)} \\ & \text{OR} \\ &= (4x+5)^2 \end{aligned}$$

b) $45x^2 - 30x + 5$

$$= 5(9x^2 - 6x + 1)$$

mult = 9
add = -6
-3, -3

$$= \boxed{5(3x-1)(3x-1)}$$

$$= 5(3x-1)^2$$

$9x^2$	$-3x$
$-3x$	1

c) $12x^2 - 29x - 8$

$12x^2$	$3x$
$-32x$	-8

mult = -96
add = -29
-32, 3

$$\begin{aligned} & 12x^2 + 3x - 32x - 8 \\ &= 3x(4x+1) - 8(4x+1) \\ &= \boxed{(4x+1)(3x-8)} \end{aligned}$$

d) $8x^2 - 11x - 10$

$8x^2$	$5x$
$-16x$	-10

mult = -80
add = -11
-16, 5

$$\begin{aligned} & 8x^2 - 16x + 5x - 10 \\ &= 8x(x-2) + 5(x-2) \\ &= \boxed{(x-2)(8x+5)} \end{aligned}$$