Key

Factoring Test Review – Prime numbers

1) 42

2 · 21

$\boxed{2 \cdot 3 \cdot 7}$

2) 100

2 · 50

2 · 2 · 25

$\boxed{2 \cdot 2 \cdot 5 \cdot 5}$

3) 210

10 · 21

$\boxed{2 \cdot 5 \cdot 3 \cdot 7}$

Find the greatest common factor.

4) 12 and 15

3 · 4

3 · 2 · 2

3 · 5

$\boxed{3}$

5) 16 and 22

4 · 4

2 · 2 · 2 · 2

2 · 11

$\boxed{2}$

6) 16 and 64

4 · 4

2 · 2 2 · 2

8 · 8

2 · 2 · 2 2 · 2 · 2

$\boxed{16}$

Key

Common Monomial Factors.

1. $10x - 5$

$2 \cdot 5 \cdot x - 5$

5

2. $16 + 4n$

$4 \cdot 4 + 4 \cdot n$

$\boxed{4}$

3. $2x + 10$

$2 \cdot x + 2 \cdot 5$

5

Find the GCF. Re-write with the GCF on the outside of the parenthesis.

4. $5x^2 + 15$

$5 \cdot x \cdot x + 5 \cdot 3$

$5(x^2 + 3)$

5. $4y + 16y^3$

$2 \cdot 2 \cdot y + 4 \cdot 4 \cdot y \cdot y \cdot y$

$2 \cdot 2 \cdot 1 \cdot y + 2 \cdot 2 \cdot 1 \cdot y \cdot y \cdot y$

$4y(1 + y^2)$

6. $2x + 6xy + 12$

$2 \cdot x + 2 \cdot 3 \cdot x \cdot y + 2 \cdot 2 \cdot 3$

$2(x + 3xy + 6)$

Key

Factor

1) $x^2 + 8x + 7 = (X+\ 1\ )(X+\ 7\ )$

Multiplies to get 7

Adds to get 8

2) $X^2 + 9X + 20 = (X+4\ )(X+5\ )$

Times to get 20

Add to get 9

3) $n^2 + 7n + 6 = (n+\ 1\ )(n+6)$

Times to get 6

Add to get 7

4) $r^2 + 10r + 21 = (r+3\ )(r+7\ )$

Times to get 21

Add to get 10

Factor and check by multiplication.

5) $y^2 + 3y + 2$

$\frac{2}{1\cdot 2}$

$(y+1)(y+2)$

6) $a^2 + 17a + 16$

$\frac{16}{1\cdot 16}$
$2\cdot 8$
$4\cdot 4$

$(a+1)(a+16)$

7) $y^2 + 8y + 15$

$\frac{15}{1\cdot 15}$
$3\cdot 5$

$(y+3(y+5)$

Key

Factoring Trinomials Two differences

Factor. Make a factor ~~table~~ for the last term.

1) $x^2 - 12x + 36$

~~$(x-6)(x-6)$~~

36

1·36 or -1·-36
2·18 or -2·-18
3·12 or -3·-12
4·9 or -4·-9
6·6 or -6·-6

2) $x^2 - 8x + 12$

12

1·12 or -1·-12
2·6
3·4 -2·-6
-3·-4

3) $n^2 - 7n + 10$

10

1·10 or -1·-10
2·5 or -2·-5

4) $r^2 - 6r + 5$

5

1·5 or -1·-

Factor and check by multiplication.

5) $y^2 - 3y + 2$

$(y-1)(y-2)$

6) $a^2 - 10a + 25$

$(a-5)(a-5)$

7) $y^2 - 12y + 27$

27

1·27 or -1·-2
3·9 or -3·-9

$(y-3)(y-9)$

Key

Factoring Trinomial Squares

Tell if the following are trinomial squares. (write yes or no)

1) $x^2 + 2x + 1$

$(x+1)(x+1)$ – yes

2) $x^2 + 4x + 4$

$(x+2)(x+2)$ yes

3) $r^2 + r + 4$

NO

4) $x^2 + 4x + 1$

NO

Factor.

5) $y^2 + 10y + 25$

$(y+5)(y+5)$

or

$(y+5)^2$

6) $a^2 + 8a + 16$

$(a+4)(a+4)$

or

$(a+4)^2$

17) $x^2 + 12x + 36$

$(x+6)(x+6)$

$(x+6)^2$

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

$(x-2)(x-2)$

$(x-2)^2$

Key

Factoring Trinomials.

1) $x^2 + 4x - 21$ $\quad -21$

$-3 \cdot 7 \quad -3 = 7$

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

2) $x^2 + 6x - 16$ $\quad -16$

$-2 \cdot 8 \quad -4 \cdot 4$

$2 = 8 \quad 4 = 4$

$(x-2)(x+8)$

3) $y^2 - 3y - 18$ $\quad -18$

$2 = 9 \quad -3 \cdot 6$

$-2 \cdot 9 \quad 3 \cdot -6$

$(y-6)(y+3)$

4) $n^2 + 3n - 10$ $\quad -10$

$-2 \cdot 5$

$2 \cdot -5$

$(n-2)(n+5)$

5) $r^2 + 2r - 24$ $\quad -24$

$-2 \cdot 12 \quad -3 \cdot 8$

$2 = 12 \quad 3 = -8$

$-4 \cdot 6$

$4 = 6$

$(r-4)(r+6)$

6) $y^2 - 9y - 22$ $\quad -22$

$-2 \cdot 11$

$2 \cdot -11$

$(y-11)(y+2)$