

Factor

$$\frac{8x}{4x} + \frac{4x^2}{4x} \quad \text{GCF} = 4x$$

$$4x(2+x)$$

$$\frac{9lm^3}{9lm^2} - \frac{9l^2m^2}{9lm^2} \quad \text{GCF} = 9lm^2$$

$$9lm^2(m-l)$$

Factor

$$\frac{4x^4}{2x} - \frac{6x^3}{2x} + \frac{14x}{2x} \quad \text{GCF} = 2x$$

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

$$\frac{8x^2yz^2}{4xyz^2} - \frac{12xy^2z^2}{4xyz^2} \quad \text{GCF} = 4xyz^2$$

$$4xyz^2(2x - 3y)$$

$$\frac{14w^3y^2}{w} - \frac{9wt^2}{w} + \frac{15w^2t^3}{w} \quad \text{GCF} = w$$

$$w(14w^2y^2 - 9t^2 + 15wt^3)$$

Name: _____ Date: _____ Period: _____

Homework: Factoring the GCF

★ Divide by
GCF

Factor the common factor out of each expression

1) $\frac{6n^6}{3n^6} - \frac{15n^8}{3n^6}$ GCF = $3n^6$

$$3n^6(2 - 5n^2)$$

2) $\frac{2m^5}{2m} + \frac{4m}{2m}$ GCF = $2m$

$$2m(m^4 + 2)$$

3) $\frac{-2x^3}{-2x^2} - \frac{4x^2}{-2x^2}$ GCF = $-2x^2$

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

4) $\frac{6n^3}{6n^3} + \frac{36n^5}{6n^3}$ GCF = $6n^3$

$$6n^3(1 + 6n^2)$$

5) $\frac{-4b}{-4} + \frac{4}{-4}$ GCF = -4

$$-4(b - 1)$$

6) $\frac{-8y^3}{-4y} + \frac{4y}{-4y}$ GCF = $-4y$

$$-4y(2y^2 - 1)$$

7) $\frac{2x^2y^2}{2x} + \frac{16x^2}{2x} + \frac{4x}{2x}$ GCF = $2x$

$$2x(xy^2 + 8x + 2)$$

8) $\frac{25a^2}{5a} - \frac{20a}{5a}$ GCF = $5a$

$$5a(5a - 4)$$

9) $\frac{4x^8}{x^3} - \frac{5x^5y}{x^3} - \frac{5x^3}{x^3}$ GCF = x^3

$$x^3(4x^5 - 5xy^2 - 5)$$

10) $\frac{4x^2}{2} - \frac{4x}{2} - \frac{2y}{2}$ GCF = 2

$$2(2x^2 - 2x - y)$$

DOUBLE CROSS

1. What do you get when you cross a chicken with a centipede?

$\frac{5}{E} \frac{8}{X} \frac{11}{T} \frac{14}{R} \frac{14}{R} \frac{12}{A} \frac{2}{D} \frac{14}{R} \frac{1}{U} \frac{10}{M} \frac{13}{S} \frac{11}{T} \frac{6}{I} \frac{7}{C} \frac{4}{K} \frac{13}{S}$

2. What do you get when you cross a mink with an octopus?

$\frac{12}{A} \frac{7}{C} \frac{12}{O} \frac{11}{A} \frac{12}{T} \frac{11}{O} \frac{3}{F} \frac{9}{A} \frac{12}{R} \frac{14}{M} \frac{10}{S} \frac{13}{S}$

Factor each polynomial below as the product of its greatest monomial factor and another polynomial. Find your answer and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it. Keep working and you will find out what you get from these "double crosses."

- Answers:
- 3 $\textcircled{1}$ $6x^2 + 9x + 27$ U
 - 5x $\textcircled{2}$ $5x^3 + 30x^2 - 15x$ D
 - 7x $\textcircled{3}$ $14x^3 - 7x^2 - 35x$ O
 - 5x $\textcircled{4}$ $25x^3 - 40x^2 + 10x$ K
 - $4x^2$ $\textcircled{5}$ $4x^4 + 20x^3 + 12x^2$ E
 - 3 $\textcircled{6}$ $3x^4 + 12x^2 - 33$ I
 - 7x $\textcircled{7}$ $49x^4 - 14x^3 - 28x$ C

- ~~E~~ \textcircled{E} $4x^2(x^2 + 5x + 3)$
- ~~L~~ \textcircled{L} $3(x^4 + 6x^2 + 11)$
- ~~O~~ \textcircled{O} $7x(2x^2 - x - 5)$
- ~~U~~ \textcircled{U} $3(2x^2 + 3x + 9)$
- ~~C~~ \textcircled{C} $7x(7x^3 - 2x^2 - 4)$
- ~~K~~ \textcircled{K} $5x(5x^2 - 8x + 2)$
- ~~B~~ \textcircled{B} $7x(7x^3 + 2x^2 - 3)$
- ~~D~~ \textcircled{D} $5x(x^2 + 6x - 3)$
- ~~J~~ \textcircled{J} $3(x^4 + 4x^2 - 11)$

$\textcircled{2}$ $2a^2 + 12ab + 6b^2$ X

$\textcircled{9}$ $6a^3 - 18ab$ F

$\textcircled{10}$ $3a^2b^2 + 15ab^3$ M

$\textcircled{11}$ $8a^4b^4 - 28a^3b^3 + 4a^2b^2$ T

$\textcircled{12}$ $6a^4b - 10a^3b^2 - 6a^2b^3$ A

$\textcircled{13}$ $7ab^5 - 56ab$ S

$\textcircled{14}$ $24ab^4 + 12ab^3 - 18ab^2$ R

Answers:

~~H~~ \textcircled{H} $6ab^2(4b^2 - 3b - 2)$

~~X~~ \textcircled{X} $2(a^2 + 6ab + 3b^2)$

~~S~~ \textcircled{S} $7ab(b^4 - 8)$

~~M~~ \textcircled{M} $3ab^2(a + 5b)$

~~R~~ \textcircled{R} $6ab^2(4b^2 + 2b - 3)$

~~N~~ \textcircled{N} $4a^2b^2(2a^2b^2 - 9ab + 2)$

~~A~~ \textcircled{A} $2a^2b(3a^2 - 5ab - 3b^2)$

~~F~~ \textcircled{F} $6a(a^2 - 3b)$

~~T~~ \textcircled{T} $4a^2b^2(2a^2b^2 - 7ab + 1)$

8 Where Do Tadpoles in the Pawn Shop Come From ?

Factor each polynomial below as the product of its greatest monomial factor and another polynomial. Find your answer and notice the letter next to it. Write this letter in each box that contains the number of that exercise.

OBJECTIVE 3-e: To factor a polynomial as the product of its greatest monomial factor and another polynomial (polynomials in one variable).

- GCF
- 3 1 $3x^2 + 18x + 9$ **A**
 - 2 2 $2x^2 + 10x + 12$ **D**
 - 7 3 $7x^2 + 14x + 35$ **E**
 - 5 4 $5x^2 - 20x + 10$ **F**
 - 3 5 $6x^2 + 9x - 21$ **D**

Answers:

- D** $3(2x^2 + 3x - 7)$
- L** $3(2x^2 + 4x - 5)$
- A** $3(x^2 + 6x + 3)$
- P** $5(x^2 - 2x + 5)$
- F** $5(x^2 - 4x + 2)$
- O** $2(x^2 + 5x + 6)$
- B** $7(x^2 + x + 6)$
- E** $7(x^2 + 2x + 5)$

- GCF
- 6** $n^3 + n^2 + n$ **A**
 - 7** $n^4 - n^3 + n^2$ **D**
 - 8** $2n^3 - n^2 - 5n$ **M**
 - 9** $3n^2 + 9n$ **F**
 - 10** $7n^2 - 28n$ **R**

Answers:

- S** $n(2n^2 - 2n - 6)$
- O** $n^2(n^2 - n + 1)$
- I** $7n(n + 5)$
- F** $3n(n + 3)$
- E** $n^2(n^2 - 2n + 3)$
- A** $n(n^2 + n + 1)$
- M** $n(2n^2 - n - 5)$
- R** $7n(n - 4)$

- GCF
- 11** $4k^3 - 32k$ **G**
 - 12** $6k^3 + 10k^2$ **N**
 - 13** $5k^3 + 15k^2 + 10k$ **R**
 - 14** $4k^3 - 20k^2 + 4$ **P**
 - 15** $4k^4 + 18k^3 - 6k^2$ **W**

Answers:

- P** $4(k^3 - 5k^2 + 1)$
- R** $5k(k^2 + 3k + 2)$
- S** $4(k^3 - 8k^2 + 2)$
- G** $4k(k^2 - 8)$
- L** $5k(k^2 + 4k + 1)$
- W** $2k^2(2k^2 + 9k - 3)$
- T** $2k^2(3k - 9)$
- N** $2k^2(3k + 5)$

4	10	2	8	1	9	13	7	11	14	6	15	12	3	5
F	R	D	M	A	F	R	D	G	P	A	W	N	E	D