

# Chapter 8 Major Quiz Review

Simplify.

Line up "like" terms only.

1.  $(5t^2 + 8) + (3t^2 + 2)$

$$\begin{array}{r} 5t^2 + 8 \\ 3t^2 + 2 \\ \hline 8t^2 + 10 \end{array}$$

2.  $10x^3y^2 - 4x^3y^2$

$$\begin{array}{r} (10-4)x^3y^2 \\ 6x^3y^2 \end{array}$$

3.  $(8m^2 + 6m - 10) + (3m^2 - 2m + 15)$

$$\begin{array}{r} 8m^2 + 6m - 10 \\ 3m^2 - 2m + 15 \\ \hline 11m^2 + 4m + 5 \end{array}$$

(Remember integer rules for addition: add "like" signs, subtract "different" signs.)

Simplify each product.

4.  $6n(8n^2 + 15n)$

$$\begin{array}{r} (6n \cdot 8n^2) + (6n \cdot 15n) \\ 48n^3 + 90n \end{array}$$

[Multiply coefficients, Add exponents]

Factor each polynomial.

7.  $24s - 64$

$$\begin{array}{l} 24s = 2 \cdot 2 \cdot 2 \cdot 3 \cdot s \\ -64 = -1 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \\ 4(6s - 16) \end{array}$$

GCF ↑      Leftovers ↓

Simplify each product.

10.  $(x + 6)(x + 3)$

$$\begin{array}{r} (x \cdot x) + (x \cdot 3) + (6 \cdot x) + (6 \cdot 3) \\ x^2 + 3x + 6x + 18 \\ x^2 + 9x + 18 \end{array}$$

OR

	x	6
x	x <sup>2</sup>	6x
3	3x	18

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

[change to "plus" if negative.]

5.  $3k^2(1 + 6k)$

$$\begin{array}{r} (3k^2 \cdot 1) + (3k^2 \cdot 6k) \\ 3k^2 + 18k^3 \\ -18k^3 + 3k^2 \end{array}$$

[Standard Form]

6.  $-8y^5(3y^2 + y + 6)$

$$\begin{array}{r} (-8y^5 \cdot 3y^2) + (-8y^5 \cdot y) + (-8y^5 \cdot 6) \\ -24y^7 - 8y^6 + 48y^5 \\ -24y^7 - 8y^6 + 48y^5 \end{array}$$

8.  $24b^2 + 48b - 36$

$$\begin{array}{l} 24b^2 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot b \cdot b \\ 48b = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot b \\ -36 = -1 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \\ 12(2b^2 + 4b - 3) \end{array}$$

GCF ↑      Leftovers ↓

9.  $2w^6 + 6w^5 + 12w^4 + 44w^2$

$$\begin{array}{l} 2w^6 = 2 \cdot w \cdot w \cdot w \cdot w \cdot w \cdot w \\ 6w^5 = 2 \cdot 3 \cdot w \cdot w \cdot w \cdot w \cdot w \\ 12w^4 = 2 \cdot 2 \cdot 3 \cdot w \cdot w \cdot w \cdot w \\ 44w^2 = 2 \cdot 2 \cdot 11 \cdot w \cdot w \\ 2w^2(w^4 + 3w^3 + 6w^2 + 22) \end{array}$$

GCF ↑      Leftovers ↓

First Outer Inner Last

11.  $(j + 5)(j - 8)$

$$\begin{array}{r} (j \cdot j) + (j \cdot -8) + (5 \cdot j) + (5 \cdot -8) \\ j^2 - 8j + 5j - 40 \\ j^2 - 3j - 40 \end{array}$$

OR

	j	5
j	j <sup>2</sup>	5j
-8	-8j	-40

$$j^2 - 3j - 40$$

Be careful with your signs.

signs!

12.  $(2x+2)(x+7)$

	$2x$	$-2$
$x$	$2x^2$	$-2x$
$-7$	$-14x$	$+49$

$2x^2 - 16x + 49$

13.  $(d+3)(d+2)$

	$d$	$3$
$d$	$d^2$	$3d$
$2$	$2d$	$6$

$d^2 + 5d + 6$

Difference of Squares:  $(a+b)(a-b) = a^2 - b^2$

14.  $(3a+8)(3a-8)$

$(3a)^2 - 8^2$   
 $9a^2 - 64$

OR USE THE BOX

	$3a$	$8$
$3a$	$9a^2$	$24a$
$-8$	$-24a$	$-64$

$9a^2 - 64$

Squaring a Binomial:  $(a-b)^2 = a^2 - 2ab + b^2$

15.  $(3z-5)^2$

$(3z)^2 - 2(3z)(5) + (5)^2$   
 $9z^2 - 30z + 25$

OR USE THE BOX

	$3z$	$-5$
$3z$	$9z^2$	$-15z$
$-5$	$-15z$	$25$

$9z^2 - 30z + 25$

16. A rectangle has length  $x + 5$  and width  $3x - 2$ . What is the area of the rectangle?

Area = length \* width

$A = (x+5)(3x-2)$

$A = 3x^2 + 13x - 10$

	$x$	$5$
$3x$	$3x^2$	$15x$
$-2$	$-2x$	$-10$

17. A square has side length  $(4x - 2)$  cm. What is the area of the square? (Square has congruent sides)

	$4x$	$-2$
$4x$	$16x^2$	$-8x$
$-2$	$-8x$	$4$

$A = 16x^2 - 16x + 4$

**BONUS** Write a trinomial with  $5x$  as the GCF of its terms.

Trinomial needs 3 terms

$15x^3 + 20x^2 + 5x$   
 $(5x \cdot 3x^2) + (5x \cdot 4x) + (5x \cdot 1)$

NOTE: GCF of  $3x^2, 4x, \& 1$  is  $1$