

Unit 1 Test Review

1. Classify each polynomial according to degree and number of terms.

$7p^4$ <i>quartic monomial</i>	$4x^3y^2+6x^2y-2xy$ <i>quintic trinomial</i>	$-5xy^2-2x^5y$ <i>6th degree binomial</i>
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2. Write each polynomial in standard form and then name it based on the degree and the number of terms.

$-9x+6x^2$ $6x^2-9x$ <i>quadratic binomial</i>	$3y-4-y^3$ $-y^3+3y-4$ y^3-3y+4 <i>cubic trinomial</i>	$7-11v$ $-11v+7$ $11v-7$ <i>linear binomial</i>
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3. Add/subtract the polynomials, and then classify the answer according to degree and number of terms.

$(4x^2+6x+7)+(2x^2-9x+1)$ $6x^2-3x+8$ <i>quadratic trinomial</i>	$(2x^3+5x-3x)+(x^3+8x^2+11)$ $x^3+8x^2+2x-11$ <i>cubic polynomial w/ 4 terms</i>
$(12m^2+4)+(8m^2+5)$ $20m^2+9$ <i>quadratic binomial</i>	$(8d^4-9d)+(2d^4+d)+(7d+6)$ $6d^4-3d+6$ <i>quartic trinomial</i>

4. Simplify each product. Use the distributive property.

$-4y^2(5y^4-3y^2+2)$ $-20y^6+12y^4-8y^2$	$2x^2y(5x^2y^2+6x^3y-2x+y)$ $10x^4y^3+12x^5y^2-4x^3y^2$
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5. Multiply each of the following. Simplify completely, and write each answer in standard form.

$(3x-5)(2x+7)$ $6x^2 + 21x - 10x - 35$ $6x^2 + 11x - 35$	$(5m+2)(8m-1)$ $40m^2 - 5m + 16m - 2$ $40m^2 + 11m - 2$
<p>Find the area.</p> <div style="text-align: center;"> $2x+5$  $3x+1$ </div> $(3x+1)(2x+5)$ $6x^2 + 15x + 2x + 5$ $6x^2 + 17x + 5$	<div style="text-align: center;"> $2x+5$  $2x-2$ </div> $(2x-2)(2x+5)$ $4x^2 + 10x - 4x - 10$ $4x^2 + 6x - 10$
$(2x-3)(4x^2+x-6)$ $2x(4x^2+x-6) - 3(4x^2+x-6)$ $8x^3 + 2x^2 - 12x - 12x^2 - 3x + 18$ $8x^3 - 10x^2 - 15x + 18$	$(6x-8)(2x^2+3x+7)$ $6x(2x^2+3x+7) - 8(2x^2+3x+7)$ $12x^3 + 18x^2 + 42x - 16x^2 - 24x - 56$ $12x^3 + 2x^2 + 18x - 56$
$(x+3)^2$ $(x+3)(x+3)$ $x^2 + 3x + 3x + 9$ $x^2 + 6x + 9$	$(r-12)^2$ $(r-12)(r-12)$ $r^2 - 12r - 12r + 144$ $r^2 - 24r + 144$
$(x+9)(x-9)$ $x^2 - 9x + 9x - 81$ $x^2 - 81$	$(3x+7)(3x-7)$ $9x^2 - 21x + 21x - 49$ $9x^2 - 49$

6. Identify the number set(s) to which each number belongs.

$\sqrt{72}$	irrational
$\frac{25}{4}$	rational
$-\frac{25}{5}$	rational
$\frac{5}{25}$	rational
$\frac{34}{2}$	rational
-6	rational
0	rational

7. Simplify each of the following completely.

$\sqrt{2400}$ $\begin{array}{c} \wedge \\ 24 \quad 100 \\ \wedge \quad \wedge \\ 4 \quad 6 \quad 50 \quad 2 \\ \wedge \quad \wedge \quad \wedge \quad \wedge \\ (2)(2) \quad (2)(3) \quad 25 \quad (2) \\ \wedge \\ (5)(5) \end{array}$ $20\sqrt{6}$	$4\sqrt{76}$ $\begin{array}{c} \wedge \\ (2) \quad 38 \\ \wedge \\ (2) \quad 19 \end{array}$ $8\sqrt{19}$	$3\sqrt{270}$ $\begin{array}{c} \wedge \\ 27 \quad 10 \\ \wedge \quad \wedge \\ 3 \quad 9 \quad 5 \quad 2 \\ \wedge \\ (3)(3) \end{array}$ $9\sqrt{30}$
$4\sqrt{18} - \sqrt{48} + 5\sqrt{8}$ $\begin{array}{c} \wedge \quad \wedge \quad \wedge \\ 9 \quad 2 \quad 8 \quad 6 \quad 4 \quad 2 \\ \wedge \quad \wedge \quad \wedge \quad \wedge \quad \wedge \\ (3)(3) \quad 4 \quad 2 \quad 2 \quad 3 \quad (2)(2) \\ \wedge \\ (2)(2) \end{array}$ $12\sqrt{2}$ $12\sqrt{2} - 4\sqrt{3} + 10\sqrt{2}$ $22\sqrt{2} - 4\sqrt{3}$	$3\sqrt{700} + 4\sqrt{63}$ $\begin{array}{c} \wedge \quad \wedge \quad \wedge \\ 70 \quad 10 \quad 9 \quad 7 \\ \wedge \quad \wedge \quad \wedge \\ 7 \quad 10 \quad (5)(2) \quad 1 \quad 3 \quad 3 \\ \wedge \\ (5)(2) \end{array}$ $30\sqrt{7} + 12\sqrt{7}$ $42\sqrt{7}$	$\begin{array}{c} 54 \\ \wedge \\ 9 \quad 6 \\ \wedge \quad \wedge \\ (3)(3) \quad 3 \quad 2 \end{array}$ $\sqrt{\frac{54}{36}} \quad \frac{\sqrt{54}}{\sqrt{36}}$ $\frac{3\sqrt{6}}{6} = \frac{\sqrt{6}}{2}$

$-4\sqrt{6}(2\sqrt{3} - 5\sqrt{10})$ $-8\sqrt{18} + 20\sqrt{60}$ $-24\sqrt{2} + 40\sqrt{15}$	$\frac{98}{27} \cdot \frac{\sqrt{98x^2}}{\sqrt{27x^2}} = \frac{7\sqrt{2}}{3\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{7\sqrt{6}}{9}$	$\frac{-3}{2\sqrt{3}-\sqrt{7}} \cdot \frac{2\sqrt{3}+\sqrt{7}}{2\sqrt{3}+\sqrt{7}}$ $\frac{-6\sqrt{3}-3\sqrt{7}}{12+2\sqrt{21}-2\sqrt{21}-7}$ $\frac{-6\sqrt{3}-3\sqrt{7}}{5}$
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8. Use dimensional analysis to solve each problem below. Show the steps.

One milliliter of food coloring makes enough blue frosting for 10 cupcakes. If you had 2 cups of food coloring, how many blue cupcakes could you frost?

$$\frac{1 \text{ mL}}{10 \text{ cupcakes}} \cdot \frac{1 \text{ cup}}{236.59 \text{ mL}} = \frac{1 \text{ cup}}{2365.9 \text{ cupcakes}} \times 2 = \frac{2 \text{ cups}}{4731.8 \text{ cupcakes}}$$

Your car is leaking oil from it's engine at 2 fluid ounces every 6 hours. How many quarts of oil will it leak in one week?

$$\frac{2 \text{ fl oz}}{6 \text{ hrs}} \cdot \frac{1 \text{ cup}}{8 \text{ fl oz}} \cdot \frac{1 \text{ qt}}{4 \text{ cup}} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{7 \text{ days}}{1 \text{ wk}} = \frac{336 \text{ qt}}{192 \text{ wk}} = \frac{1.75 \text{ qt}}{1 \text{ wk}}$$

If a month is 4 weeks long and your car can hold 8 quarts of oil at one time, will you have to add more oil at the end of the month? Why or why not?

$$\frac{1.75 \text{ qt}}{\text{wk}} \times 4 = \frac{7 \text{ qt}}{4 \text{ wks (1 mos.)}} \quad \boxed{\text{NO}}$$

A dripping shower leaks 1 fluid ounce of water every 20 minutes. How many gallons will it leak in 1 week?

$$\frac{1 \text{ fl oz}}{20 \text{ min}} \cdot \frac{1 \text{ cup}}{8 \text{ fl oz}} \cdot \frac{1 \text{ qt}}{4 \text{ cup}} \cdot \frac{1 \text{ gal}}{4 \text{ qt}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{24 \text{ hr}}{1 \text{ day}} \cdot \frac{7 \text{ days}}{1 \text{ wk}} = \frac{10080}{2560}$$

$$3.9375 \text{ gal/wk}$$

Marching bands march 8 steps each 5 yards and they march 50 steps per minute. If the band marches continuously, how long will it take to march 1 mile?

$$\frac{8 \text{ steps}}{5 \text{ yd}} \cdot \frac{1760 \text{ yd}}{1 \text{ mi}} = \frac{14,080}{5} = 2816 \text{ steps/mi} \div 50 = 56.32 \text{ min.}$$