

Warmup

*Unit O Test tomorrow

1) Multiply
 $(4\sqrt{2} - \sqrt{3})(\sqrt{2} + 1)$

$$\begin{array}{r} 4\sqrt{2} - \sqrt{3} \\ \sqrt{2} - 4\sqrt{4} \quad \sqrt{6} \\ 1 \quad 4\sqrt{2} \quad -\sqrt{3} \end{array}$$

$$-4\sqrt{4} + \sqrt{6} + 4\sqrt{2} - \sqrt{3}$$

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$$-8x + \sqrt{6} + 4\sqrt{2} - \sqrt{3}$$

2) Convert $\frac{45 \text{ km}}{\text{hr}}$ to $\frac{\text{mm}}{\text{sec}}$

$$\frac{45 \text{ km}}{1 \text{ hr}} \cdot \frac{100000 \text{ mm}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}}$$

$$\boxed{1250 \text{ mm/sec}}$$

3) Rat or IRR?

$$\sqrt{36} - 4\sqrt{2} + \sqrt{32}$$

$$\sqrt{36} - 4\sqrt{2} + \sqrt{32}$$

$$\textcircled{6} \textcircled{6}$$

$$6 - 4\sqrt{2} + 4\sqrt{2}$$

6
Rat

1. Jimmy is spending twelve less than double the amount of money that Jane spends on groceries. If Jane spends x amount of dollars, write an **expression** that represents the amount that Jimmy spends.

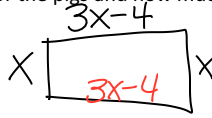
$2x - 12$

2. Ashley is 6 years less than triple her grandfather's age. What would be the **expression** for this?

$3x - 6$

3. We are building a pen for our pigs. One side is 4 less than triple the other. Write an expression for the **area** and **perimeter** so you know how much fencing to buy for the pigs and how much room they have?

$3x - 4$
 x
 $3x - 4$
 x
 $8x - 8$



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

4. Simplify the following

a. $(4x^3 + 1x - 6) + (x^2 + 2x + 5) - (x^3 + 4x)$
 $4x^3 - 6 + x^2 + 2x + 5 - x^3 - 4x$
 $3x^3 + x^2 - x - 1$

b. $(5xy - 4x + 9y^2) - (10 - 18x + 9xy)$
 $5xy - 4x + 9y^2 - 10 + 18x - 9xy$
 $-4xy + 14x + 9y^2 - 10$

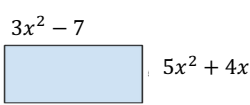
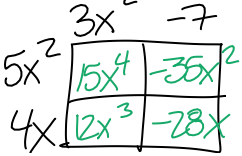
5. Multiply the following polynomials.

a. $(4xy - 1)(5xy + 4)$
 $20x^2y^2 + 16xy - 5xy - 4$
 $20x^2y^2 + 11xy - 4$

b. $x^4(5x^4 - 10x^3 + x^2 - 9x + 14)$
 $5x^8 - 10x^7 + x^6 - 9x^5 + 14x^4$

6. Calculate the **area** and **perimeter** of the rectangle

Area: $15x^4 + 12x^3 - 35x^2 - 28x$ Perimeter: $16x^2 + 8x - 14$



$3x^2 - 7$
 $3x^2 - 7$
 $5x^2 + 4x$
 $5x^2 + 4x$

7. What is the coefficient in the term $5x^4$? 5 What does **coefficient** mean? (explain in words)

in front of variable

8. How many terms does the expression have: $3x^4 + 2x^3 + 5x + 4$ 4
 What is a term? How are terms split up?

split by + or -

9. a. Simplify $\sqrt{6x}(3x - \sqrt{3})$ b. Simplify $(4x - 2\sqrt{3})(7 + 6\sqrt{3x})$

$3x\sqrt{6x} - \sqrt{18x}$
 $3x\sqrt{6x} - 3\sqrt{2x}$

$4x - 2\sqrt{3}$
 7
 $28x - 14\sqrt{3}$
 $24x\sqrt{3x} - 12\sqrt{9x}$
 $6\sqrt{3x} - 12\sqrt{9x}$

10. Simplify the following: $-3x\sqrt{990x^4y^7z^{20}}$ $28x - 14\sqrt{3} + 24x\sqrt{3x} - 12\sqrt{9x}$

$28x - 14\sqrt{3} + 24x\sqrt{3x} - 36\sqrt{x}$

11. A rectangle has a total perimeter of $\sqrt{72}$ and a side length of $\sqrt{12}$. What is the length of the other side?

$-3x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot z^{10} \cdot 3\sqrt{11} \cdot 5 \cdot 2y$
 $-9x^3y^3z^{10}\sqrt{110y}$

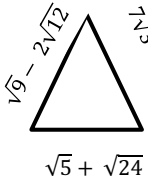


Peri: $\sqrt{72}$

$\sqrt{72} - 2\sqrt{12}$
 $\frac{-4\sqrt{3} + 6\sqrt{2}}{2}$

$-2\sqrt{3} + 3\sqrt{2}$

12. Find the perimeter of the following:



$$-2\sqrt{6} + \sqrt{5} + 3 + 3\sqrt{3}$$

13. Your grandmother has bought a rectangular table that has side lengths of $3\sqrt{18}$ on two sides and $2\sqrt{24}$ on the other two sides. What would be the area of the table your grandmother has?



$$3\sqrt{18} \cdot 2\sqrt{24} = 6\sqrt{432} = 72\sqrt{3}$$

$$2\sqrt{3} - 4\sqrt{6} + \sqrt{5} + \sqrt{24} + 2\sqrt{3} - 4\sqrt{6} - 2\sqrt{2}$$

14. Your pool is filling up at a rate of 1200 gallons/hour. What would be the speed in milliliters/second?

(1 gallon = 3.785 liters)

$$1200 \text{ gal/hr} \cdot \frac{3.785 \text{ L}}{1 \text{ gal}} \cdot \frac{1000 \text{ mL}}{1 \text{ L}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = 12.62 \text{ mL/sec}$$

15. You are driving at a speed of 90 meters/day. What is your speed in inches/min? (3.3 ft = 1 m, 12 in = 1 ft)

$$\frac{90 \text{ m}}{1 \text{ day}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{3.3 \text{ ft}}{1 \text{ m}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = 2.475 \text{ in/min}$$

16. The approximate distance from EJCHS to Walmart is 18 miles. What would be the distance hectometers?

(1 km = 0.621 miles)

$$\frac{18 \text{ miles}}{1} \cdot \frac{1 \text{ km}}{0.621 \text{ mi}} \cdot \frac{10 \text{ hm}}{1 \text{ km}} = 289.86 \text{ hm}$$

17. The distance that Mrs. Forrester walks around the classroom is 14,500 feet per year. What is the distance in km per hour? (2.54 cm = 1 in)

$$\frac{14500 \text{ ft}}{1 \text{ yr}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} \cdot \frac{1 \text{ km}}{100000 \text{ cm}} \cdot \frac{1 \text{ yr}}{365 \text{ days}} \cdot \frac{1 \text{ day}}{24 \text{ hr}} = 0.000505 \text{ km/hr}$$

18. State if the value is rational or irrational

$$4\sqrt{8} + 7 - 5\sqrt{2} \rightarrow 8\sqrt{2} + 7 - 5\sqrt{2} = 3\sqrt{2} + 7$$

- a. Rational or irrational? (circle one)
- b. Explain (how do you know):
Non perfect $\sqrt{\quad}$

19. State if the value is rational or irrational: $\sqrt{121} - \sqrt{25} + 4$

$$11 - 5 + 4 = 10$$

- a. Rational or irrational? (circle one)
- b. Explain (how do you know):
Whole #

20. The **product** of two **rational** numbers is always / sometimes / never rational. (circle the best choice)

a. Show 2 examples of this with numbers

$$4(2) = 8 \quad \frac{1}{2}(\frac{1}{2}) = \frac{1}{4}$$

21. The **sum** of two **irrational** numbers is always / sometimes / never irrational. (circle the best choice)

a. Show 2 examples of this with numbers

$$\pi + -\pi = 0 \quad \sqrt{3} + \sqrt{3} = 2\sqrt{3}$$

22. Use the formula given: $d = \frac{v^2}{t}$ where velocity, v , is cm/sec and time, t , is sec. What are the units for d ?

$$\frac{\left(\frac{\text{cm}}{\text{sec}}\right)^2}{\text{sec}} = \frac{\text{cm}^2}{\text{sec}^2} \cdot \frac{1}{\text{sec}} = \frac{\text{cm}^2}{\text{sec}^3}$$