GSE Honors Algebra 1

Unit 0 Test Review

Name: Key

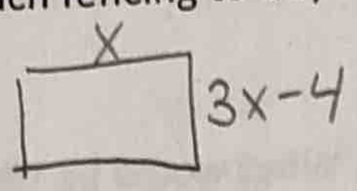
1. Jimmy is spending twelve less than double the amount of money that Jane spends on groceries. If Jane spends x amount of dollars, write an **expression** that represents the amount that Jimmy spends.

$2x-12$

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?



Perm

$x+x+3x-4+3x-4$

$8x-4$

Area

$x(3x-4)$

$3x^2-4x$

4. **Simplify** the following

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

$3x^3+x^2-x-1$

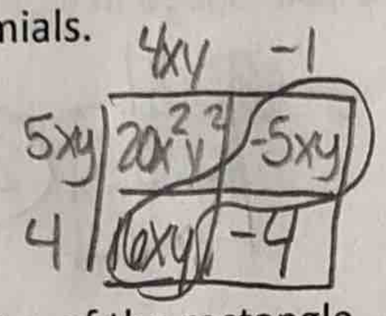
b. $(5xy-4x+9y^2)-(10-18x+9xy)$

$-4xy+14x+9y^2-10$

5. **Multiply** the following polynomials.

a. $(4xy-1)(5xy+4)$

$20x^2y^2+11xy-4$



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

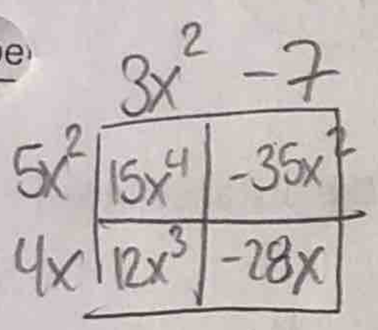
$5x^8-10x^7+x^6-9x^5+14x^4$

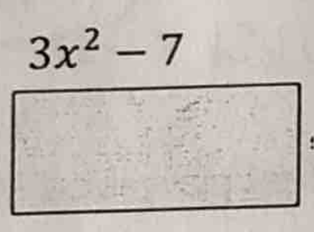
6. Calculate the **area** and **perimeter** of the rectangle

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: $3x^4+2x^3-5xy+4$ = 4

What is a term? How are terms split up?

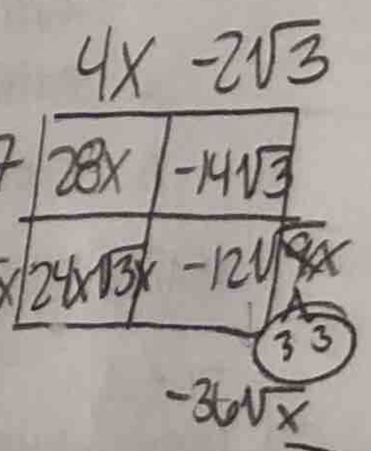
and/or variable split up by a + or - sign

9. a. Simplify $\sqrt{6x}(3x-\sqrt{3})$

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

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

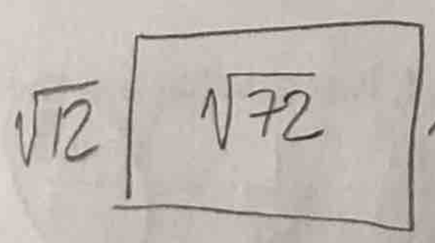
$28x-14\sqrt{3}+24x\sqrt{3x}-36\sqrt{x}$



10. Simplify the following: $-3x\sqrt{990x^4y^7z^{20}}$

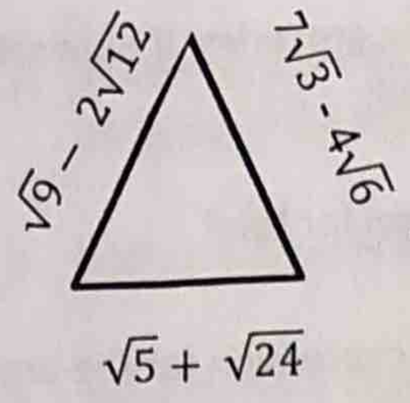
$-9x^3_4z^{10}\sqrt{110y}$

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?



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

12. Find the perimeter of the following:

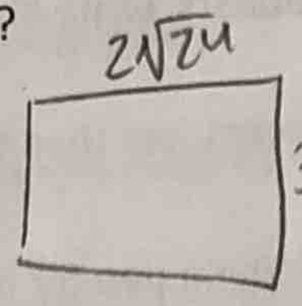


$3 - 4\sqrt{3} + 7\sqrt{3} - 4\sqrt{6} + \sqrt{5} + 2\sqrt{6}$

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

$\sqrt{9} - 2\sqrt{12} + 7\sqrt{3} - 4\sqrt{6} + \sqrt{5} + \sqrt{24}$ $2\sqrt{6}$

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?



$2\sqrt{24} \cdot 3\sqrt{18}$

$6\sqrt{432} = 72\sqrt{3}$

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)

$\frac{1200 gal}{1 hr} \cdot \frac{3.785 L}{1 gal} \cdot \frac{1000 mL}{1 L} \cdot \frac{1 hr}{60 miles} \cdot \frac{1 min}{60 sec} = \frac{4542000}{3600}$

1261.67 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)

$\frac{90 m}{1 day} \cdot \frac{1 day}{24 hr} \cdot \frac{1 hr}{60 min} \cdot \frac{3.3 ft}{1 m} \cdot \frac{12 in}{1 ft} = \frac{3564}{1440} =$ 2.472 in/min

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

(1 km = 0.621 miles)

$\frac{18 miles}{1} \cdot \frac{1 km}{0.621 miles} \cdot \frac{10 HM}{1 km} = \frac{180}{0.621} =$ 111.78 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)

K H D B D C M

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

$\frac{441960}{876000000}$

0.0005 km/hr

18. State if the value is rational or irrational

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

a. Rational or irrational? **(circle one)**

b. Explain (how do you know) :

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

$3\sqrt{2} + 7$ Radical still in problem.

19. State if the value is rational or irrational:

$\sqrt{121} - \sqrt{25} + 4$

a. Rational or irrational? **(circle one)**

b. Explain (how do you know)

$11 - 5 + 4 = 10$ All perfect square √ #s, so no decimals that continue on & on.

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

a. Show 2 examples of this with numbers

$4 \cdot 2 = 8$ ✓ $\frac{1}{2} \cdot \frac{2}{4} = \frac{2}{8} = \frac{1}{4}$ ✓

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

a. Show 2 examples of this with numbers

$\pi \cdot \sqrt{3} = \pi\sqrt{3}$ IRR $\sqrt{3} \cdot \sqrt{3} = \sqrt{9} = 3$ Rat

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?

$\frac{(\frac{cm}{sec})^2}{sec}$ KCF $\frac{cm^2}{sec^2} \cdot \frac{1}{sec} = \frac{cm^2}{sec^3}$