

Warmup

1/2 sheet you picked up

You are turning this in 😊

Write an algebraic expression for each verbal expression:

- The sum of four and a number times three
- The quotient of a number cubed and five
- Six less than nine times a number

$$\frac{x^3}{5} \quad \frac{3(4+x)}{\quad}$$

$$\frac{9x-6}{\quad}$$

Simplify each expression:

4. ~~-4a~~ - 2 - ~~3a~~ + 9

$-7a + 7$

5. $(-x^3 - 3x^2) - (-5x^3 - 2)$

~~$-x^3 - 3x^2 + 5x^3 + 2$~~

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

6. $(-n + 4n^2 + 2) - (5n - 7n^2) - (-3 - 2n + 2n^2)$

~~$-n + 4n^2 + 2 - 5n + 7n^2 + 3 + 2n - 2n^2$~~ = $9n^2 - 4n + 5$

7. $2b^3(-7b + 9)$

$-14b^4 + 18b^3$

8. $-3y(4y^2 + 7y - 9) + 4y(4y^2 - 8y - 1)$

~~$-12y^3 - 21y^2 + 27y + 16y^3 - 32y^2 - 4y$~~

$4y^3 - 53y^2 + 23y$

9. $4\sqrt{2}(2\sqrt{12} - \sqrt{6})$

$8\sqrt{24} - 4\sqrt{12}$
 $16\sqrt{6} - 8\sqrt{3}$

10. $3x\sqrt{2}(\sqrt{8x^2} + 5x\sqrt{24})$

~~$3x\sqrt{16x^2} + 15x^2\sqrt{48}$~~
 $12x^2 + 60x^2\sqrt{3}$

11. $2\sqrt{8} * -3\sqrt{6}$

$-6\sqrt{48} = -24\sqrt{3}$

12. $(4x - 1)(5x + 3)$

$20x^2 + 7x - 3$

13. $(3\sqrt{2} + \sqrt{5})(\sqrt{2} + 2\sqrt{4})$

$6 + \sqrt{10} + 12\sqrt{2} + 4\sqrt{5}$

14. $(\sqrt{2x} - 1)(\sqrt{4x} + 2\sqrt{3x})$

$\sqrt{2x}$	-1
$\sqrt{4x}$	$2\sqrt{3x}$
$\sqrt{8x^2}$	$2\sqrt{6x^2}$
$-\sqrt{4x}$	$-2\sqrt{3x}$

15. $-6\sqrt{28m^4p^5q^2}$

$2 \cdot 2 \cdot 7 \cdot m \cdot m \cdot m \cdot m \cdot p \cdot p \cdot p \cdot p \cdot p \cdot q \cdot q$

16. $3\sqrt{24} + 2\sqrt{20} - 2\sqrt{45}$

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

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

$-6 \cdot 2 \cdot m \cdot m \cdot p \cdot p \cdot q \cdot q \sqrt{7p}$
 $-12m^2p^2q\sqrt{7p}$

17. Joe has 972 inches of rope. He needs 24 yards of rope. Does he have enough? If yes, how much extra does he have? If no, how much more does he need?

$$12 \text{ in} = 1 \text{ ft}$$

$$3 \text{ ft} = 1 \text{ yd}$$

$$\frac{972 \text{ in}}{1} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} = \boxed{27 \text{ yds}}$$

yes
3 yds

18. Jessica has 3 gallons of Kool-Aid for her daughter's party. If each friend only drinks 1 cup of Kool-Aid each, how many friends can she invite?

$$\frac{3 \text{ gal}}{1} \cdot \frac{4 \text{ qts}}{1 \text{ gal}} \cdot \frac{2 \text{ pts}}{1 \text{ qt}} \cdot \frac{2 \text{ cups}}{1 \text{ pt}} = 48 \text{ cups}$$


48 midgets

19. Paul has a pool that holds 2,700 gallons of water. How many ounces of water is this?

$$\frac{2700 \text{ gal}}{1} \cdot \frac{4 \text{ qts}}{1 \text{ gal}} \cdot \frac{2 \text{ pts}}{1 \text{ qt}} \cdot \frac{2 \text{ cups}}{1 \text{ pt}} \cdot \frac{8 \text{ oz}}{1 \text{ cup}} =$$

20. A rectangle has a width of 4 decimeters and a length of 321 decimeters. What is the perimeter in decimeters?

KHDBDCM 2 right



$$2(4 + 321) = 646 \text{ decim}$$

21. What is the area of the rectangle from #24 in decimeters?

4 deca 321, 2 left

$$4 \times 3.21 = 12.84 \text{ decameters}^2$$

Rational and Irrational

Label the following as rational or irrational.

22. $\sqrt{48}$

$$4\sqrt{3}$$

IRR

23. $\pi - \sqrt{\pi}$

IRR

24. $\frac{48}{\sqrt{36}} = 8$

Rat

25. $\sqrt{7} * \sqrt{7} = 7$

Rat

26. Give an example of each and tell what type of number it is

a. Rational * Irrational $7 * \pi = 7\pi$ IRR

b. Irrational * Irrational $\sqrt{3} * \sqrt{3} = \sqrt{9} = 3$ Rat $\pi * \sqrt{6} = \pi\sqrt{6}$ IRR

c. Irrational * Rational $7 * \sqrt{7} = 7\sqrt{7}$ IRR $3\sqrt{2} * 0 = 0$ Rat