

Directions: Label the following algebraic expressions as Rational or Irrational.

1) $3\sqrt{47}$

I

2) $\frac{1}{5}$

R

3) $0.\overline{33}$

R

4) 4.236715...

I

5) $\sqrt[3]{512}$

R

6) $10\pi - 1$

I

7) $\sqrt{20} - 2\sqrt{5}$

R

8) 6.28

R

Directions: Determine if the following statement is ALWAYS true, SOMETIMES true, or NEVER true.

9) The product of two rational numbers is irrational.

NEVER

10) The sum of two irrational numbers is rational.

Sometimes

11) The product of a rational and irrational number is 0.

Sometimes

12) The sum of two rational numbers is rational.

Always

Directions: Simplify completely.

13) $\sqrt{72}$

$6\sqrt{2}$

14) $\sqrt{24a^4}$

$2a^2\sqrt{6}$

15) $2\sqrt{18k^5m^3}$

$6k^2m\sqrt{2km}$

16) $\sqrt{128}$

$8\sqrt{2}$

17) $\sqrt{1600x^4y^7}$

$40x^2y^3\sqrt{y}$

18) $\sqrt{160x^3y^8}$

$4xy^4\sqrt{10x}$

Directions: Simplify completely.

19) $5\sqrt{3} + 6\sqrt{3} + 2\sqrt{7} - 4\sqrt{7}$

$11\sqrt{3} - 2\sqrt{7}$

20) $7\sqrt{3km} - \sqrt{27km}$

$4\sqrt{3km}$

21) $2\sqrt{20} + 3\sqrt{5}$

$$7\sqrt{5}$$

22) $2\sqrt{6} \cdot 4\sqrt{8} \cdot \sqrt{3}$

$$96$$

23) $\sqrt{5}(3\sqrt{5} - 4\sqrt{3})$

$$15 - 4\sqrt{15}$$

24) $(5\sqrt{3})^2$

$$75$$

25) $\frac{2}{\sqrt{6}}$

$$\frac{\sqrt{6}}{3}$$

26) $\frac{5\sqrt{32}}{2\sqrt{5}}$

$$2\sqrt{10}$$

27) $\sqrt{\frac{4}{9}}$

$$\frac{2}{3}$$

28) $6\sqrt{6} + 2\sqrt{2}(6\sqrt{3} - 3\sqrt{2})$

$$18\sqrt{6} - 12$$

Directions: Solve.

29) What is the perimeter of a rectangle if the length of the sides are $6\sqrt{3}$ and $2\sqrt{27}$?

~~1000~~ ~~1000~~ $24\sqrt{3}$

30) If a square has a perimeter of $40\sqrt{2}$ meters, what is the area of the square?

$$200\text{m}^2$$

31) What are the dimensions of Lucy's garden if the total area is 240 yards squared if the length is $6\sqrt{2}$?

$$6\sqrt{2} \text{ by } 20\sqrt{2}$$