

Name Answer

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Directions: Below (and on the back) are practice problems that you must complete during your homeroom on Tuesday, 3/1. This will be a classwork grade and is due on Wednesday, 3/2 at the beginning of class. Remember to SHOW YOUR WORK for full credit.

Simplifying Radicals:

1) $\sqrt{40x^2y^3z^8}$
 $2|x||y|z^4\sqrt{10y}$

40
 20^2
 5^4
 (2^2)

2) $\sqrt{98ab^7c^5}$
 $7b^3c^2\sqrt{2abc}$

98
 2^49
 (7^2)

3) $\sqrt[3]{24m^6n^4}$
 $2m^2n\sqrt[3]{3n}$

24
 6^4
 3^2
 (2^2)

4) $\sqrt[3]{250d^2e^7f^{14}}$
 $5e^2f^4\sqrt[3]{2d^2ef^2}$

250
 25^10
 (5^5)
 (5^2)

5) $\sqrt{12} \cdot \sqrt{48}$
 $8 \cdot 3 = 24$

$\sqrt{576}$
 3^192
 3^64
 (8^2)

6) $\sqrt[3]{4} \cdot \sqrt[3]{14}$
 $2\sqrt[3]{7}$

$\sqrt[3]{56}$
 4^14
 (2^2)
 (7^1)
 (2^1)

7) $5\sqrt{6x^4y^3} \cdot 4\sqrt{2xy^5}$
 $20\sqrt{12x^5y^8}$

12
 6^2
 (3^2)

8) $-2\sqrt[3]{9a^2b^4} \cdot 6\sqrt[3]{3ab^5}$
 $-12 \cdot 3ab^3$
 $-36ab^3$

$-12\sqrt[3]{27a^3b^9}$
 9^3
 (3^3)

Adding + Subtract Radicals:

9) $3\sqrt{7} + 8\sqrt{7}$
 $11\sqrt{7}$

$20 \cdot 2x^2y^4\sqrt{3x}$
 $40x^2y^4\sqrt{3x}$

10) $14\sqrt{20} - 3\sqrt{125}$
 $14 \cdot 2\sqrt{5} - 3 \cdot 5\sqrt{5}$
 $28\sqrt{5} - 15\sqrt{5}$
 $13\sqrt{5}$

125
 25^5
 (5^5)

20
 5^4
 (2^2)

$5\sqrt{5}$
 $2\sqrt{5}$

11) $6\sqrt{50} - 2\sqrt{8} + 5\sqrt{12}$

65^2
 4^2
 3^4
 (2^2)

12) $45\sqrt{2} - 4\sqrt{5}$
 $\sqrt{45} - 4\sqrt{5}$

9^5
 (3^3)

$3\sqrt{5} - 4\sqrt{5}$
 $(-1\sqrt{5})$

$6 \cdot 5\sqrt{2} - 2 \cdot 2\sqrt{2} + 5 \cdot 2\sqrt{3}$
 $30\sqrt{2} - 4\sqrt{2} + 10\sqrt{3}$
 $26\sqrt{2} + 10\sqrt{3}$

Multiply & Dividing Radicals

(Note: Try your best on dividing! We will discuss in class)

13) $\frac{\sqrt{6}(5+\sqrt{3})}{5\sqrt{6} + \sqrt{18}}$ $\frac{5\sqrt{6} + 3\sqrt{2}}{9\sqrt{2}}$

14) $\frac{\sqrt{2} + \sqrt{3}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \sqrt{10} + \sqrt{15}$

NOT COUNTED (15)

$\frac{\sqrt{200}}{\sqrt{5}}$ $\frac{\sqrt{40}}{2\sqrt{10}}$

NOT COUNTED (16)

$\frac{\sqrt{7} \cdot \sqrt{8x}}{\sqrt{8x} \cdot \sqrt{8x}} = \frac{\sqrt{56x}}{8x}$

17) $(3+\sqrt{2})(5-4\sqrt{2})$
 $15 - 12\sqrt{2} + 5\sqrt{2} - 4 \cdot 2$
 $15 - 7\sqrt{2} - 8$
 $7 - 7\sqrt{2}$

18) $(4+\sqrt{3})(4-\sqrt{3})$

$16 - 4\sqrt{3} + 4\sqrt{3} - 3$
 $16 - 3$
 $= 13$

19) $(\sqrt{5} + \sqrt{6})^2$ $(\sqrt{5} + \sqrt{6})(\sqrt{5} + \sqrt{6})$
 $5 + \sqrt{30} + \sqrt{30} + 6$
 $11 + 2\sqrt{30}$

20) $(8-3\sqrt{2})^2$ $(8-3\sqrt{2})(8-3\sqrt{2})$
 $64 - 24\sqrt{2} - 24\sqrt{2} + 9 \cdot 2$
 $64 - 48\sqrt{2} + 18$
 $82 - 48\sqrt{2}$

Write each expression in radical form.

23) $x^{\frac{2}{3}}$ $\sqrt[3]{x^2}$

24) $m^{\frac{5}{2}}$ $\sqrt{m^5}$

25) $y^{1.5} = y^{3/2}$ $\sqrt{y^3}$

26) $9^{-\frac{1}{3}}$ $\frac{1}{9^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{9}}$

Write each expression in exponential form.

27) $\sqrt[2]{x}$ $x^{\frac{1}{2}}$

28) $\sqrt[3]{y^2}$ $y^{\frac{2}{3}}$

29) $(\sqrt[4]{a})^3$ $a^{\frac{3}{4}}$

30) $\sqrt{5xy^3}$ $(5x)^{\frac{1}{2}} y^{\frac{3}{2}}$

Simplify each expression. Assume all variables are positive.

31) $49^{\frac{3}{2}}$ 343

32) $64^{\frac{2}{3}}$ $\frac{1}{16}$

33) $9^{-1.5}$ $\frac{1}{27}$

34) $(-32)^{\frac{2}{5}}$ -4 *odd index can have negatives*

35) $(x^{\frac{2}{3}})^6 \cdot x^{12/3}$ $= x^4$

36) $(64a^3b^6)^{\frac{1}{3}}$ $\sqrt[3]{64a^3b^6} = 4ab^2$

37) $x^{\frac{1}{4}} \cdot x^{\frac{2}{3}}$ $x^{\frac{11}{12}}$

38) $\frac{y^{\frac{1}{2}}}{y^{\frac{1}{3}}}$ $y^{\frac{1}{6}}$