Name _____

Period ___ 5.6 Date 11/30/20

Simplifying Radicals

1) $\sqrt{169} = (13)$

2) $\sqrt{200}$

$\sqrt{100 \cdot 2}$

$10\sqrt{2}$

3) $\sqrt{125}$

$\sqrt{25 \cdot 5}$

$5\sqrt{5}$

4) $-5\sqrt{112}$

$-5\sqrt{16 \cdot 7}$

$-5 \cdot 4\sqrt{7}$

$-20\sqrt{7}$

5) $\sqrt{68}$

$\sqrt{4 \cdot 17}$

$2\sqrt{17}$

6) $3\sqrt{121}$

$3 \cdot 11$

33

7) $\sqrt{63t^4}$

$\sqrt{9 \cdot 7t^4}$

$3t^2\sqrt{7}$

8) $\sqrt{48n^3}$

$\sqrt{16 \cdot 3n^3}$ $n^2 n^1$

$4n\sqrt{3n}$

9) $\sqrt{60m^7}$

$\sqrt{4 \cdot 15m^7}$

$2m^3\sqrt{15m}$

10) $x\sqrt{150x^2}$

$x\sqrt{25 \cdot 6x^2}$

$5xx^1\sqrt{6}$

$5x^2\sqrt{6}$

11) $-3\sqrt{45y^3}$

$-3\sqrt{9 \cdot 5y^3}$

$-3 \cdot 3y\sqrt{5y}$

$-9y\sqrt{5y}$

12) Simplify each product

$\sqrt{6} \cdot \sqrt{30}$

$\sqrt{180}$

$\sqrt{36 \cdot 5}$

$6\sqrt{5}$

13) $\sqrt{5} \cdot \sqrt{70}$

$\sqrt{350}$

$\sqrt{25 \cdot 14}$

$5\sqrt{14}$

14) $2\sqrt{3} \cdot \sqrt{96}$

$2\sqrt{288}$

$2\sqrt{144 \cdot 2}$

$2 \cdot 12\sqrt{2}$

$24\sqrt{2}$

15) $-4\sqrt{7} \cdot \sqrt{42}$

$-4\sqrt{294}$

$-4\sqrt{49 \cdot 6}$

$-4 \cdot 7\sqrt{6}$

$-28\sqrt{6}$

16) $\sqrt{4a^4} \cdot \sqrt{12a^5}$

$\sqrt{48a^6}$

$\sqrt{16 \cdot 3a^6}$

$4a^3\sqrt{3}$

17) $\sqrt{2n^2} \cdot \sqrt{30n}$

$\sqrt{60n^3}$

$\sqrt{4 \cdot 15n^3}$

$2n\sqrt{15n}$

18) Simplify each radical expression.

$\sqrt{\frac{36}{49}} = \frac{6}{7}$

19) $\sqrt{\frac{81}{16}} = \frac{9}{4}$

20) $\sqrt{\frac{100}{225}} = \frac{10 \div 5}{15 \div 5} \quad \frac{2}{3}$

21) $\sqrt{\frac{18y}{36y^3}} \quad \sqrt{\frac{9 \cdot 2 \cancel{y}}{36 y^2 \cancel{y}}} \quad \frac{3\sqrt{2}}{6y} \quad \frac{1\sqrt{2}}{2y} = \frac{\sqrt{2}}{2y}$

22) $\sqrt{\frac{49x^5}{25x^1}} \quad \sqrt{\frac{49x^4}{25}} = \frac{7x^2}{5}$

23) $\sqrt{\frac{16a^2}{4b^4}} \quad \frac{4a}{2b^2} \quad \frac{2a}{b^2}$

24) $\frac{\sqrt{5}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{10}}{\sqrt{4}} = \frac{\sqrt{10}}{2}$

25) $\frac{\sqrt{12}}{\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}} \quad \frac{\sqrt{180}}{\sqrt{225}} = \frac{\sqrt{36 \cdot 5}}{15} \quad \frac{6\sqrt{5}}{15} \quad \frac{2\sqrt{5}}{5}$

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Examples.

1) $\sqrt{3} \cdot \sqrt{48}$

$\sqrt{144}$

12

2) $-\frac{1}{2}\sqrt{54c^6} \cdot -4\sqrt{6c^8}$

$2\sqrt{324c^{14}}$

$2 \cdot 18c^7$

$36c^7$

3) $\frac{9n}{\sqrt{63n^3}} \cdot \frac{\sqrt{63n^3}}{\sqrt{63n^3}} = \frac{9n\sqrt{63n^3}}{\sqrt{3969n^6}} = \frac{9n^2\sqrt{63n}}{63n^3}$

$\frac{1\sqrt{63n}}{7n}$ $\frac{1\sqrt{9 \cdot 7n}}{7}$ $\frac{3\sqrt{7n}}{7}$

4) $\frac{\sqrt{24}}{\sqrt{4 \cdot 6}}$

$2\sqrt{6}$

5) $\sqrt{\frac{64}{81}} = \frac{8}{9}$