

## 10.1 Algebra Quiz Review

Name \_\_\_\_\_

ID: 2

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Date \_\_\_\_\_

Period \_\_\_\_\_

Find the missing side of each right triangle. Round your answers to the nearest tenth if necessary.

1)  $a = 5$  mi,  $b = 12$  mi

2)  $a = 6$  m,  $b = 8$  m

3)  $b = 12$  ft,  $c = 13$  ft

4)  $b = 12$  cm,  $c = 15$  cm

State if the three sides lengths form a right triangle.

5) 5 cm, 12 cm, 13 cm

6) 6 cm, 8 cm, 12 cm

7) 11 km, 12 km, 15 km

8) 8 mi, 12 mi, 13 mi

\* Problems # 4 & 5 on Quiz are Pythagorean Theorem word problems. Refer to your 10.1 hmwk for practice.

Similar to #1-3 on Quiz

Similar to #6-8 on Quiz

Simplify each radical expression.

1)  $\sqrt{48x^2}$

2)  $\sqrt{192x^3}$

3)  $\sqrt{32a^4}$

4)  $3\sqrt{72n^2}$

5)  $-5\sqrt{150x^4}$

6)  $-8\sqrt{72x}$

7)  $(\sqrt{81})^2$

8)  $3\sqrt{90b^5}$

9)  $-7\sqrt{125n^3}$

10)  $-9\sqrt{63x^5}$

11)  $\frac{\sqrt{5}}{\sqrt{125}}$

12)  $\frac{\sqrt{4}}{\sqrt{25}}$

13)  $\frac{\sqrt{6}}{\sqrt{4}}$

14)  $\frac{\sqrt{20}}{\sqrt{36}}$

15)  $\frac{\sqrt{2b^2}}{\sqrt{3b}}$

16)  $\frac{\sqrt{9v^4}}{\sqrt{6v}}$

17)  $\frac{\sqrt{8k^2}}{\sqrt{6k}}$

18)  $\frac{\sqrt{4x^3}}{\sqrt{5x^3}}$

19)  $\frac{\sqrt{4p^4}}{\sqrt{3p^4}}$

20)  $\frac{\sqrt{3r^2}}{\sqrt{2r^3}}$

21)  $\sqrt{3x^3} \cdot \sqrt{15x^3}$

22)  $\sqrt{6x^3} \cdot \sqrt{6x^3}$

23)  $\sqrt{5n} \cdot \sqrt{5n}$

24)  $\sqrt{12v^2} \cdot \sqrt{6v^3}$

similar to #9-11 on Quiz #10

similar to #12-14 on Quiz

similar to #15 on Quiz

similar to  
# 17 on Quiz

$$25) \sqrt{10x^3} \cdot -5\sqrt{6x}$$

$$26) 3\sqrt{10x} \cdot \sqrt{5x}$$

$$27) 4\sqrt{10p} \cdot \sqrt{5p^2}$$

$$28) -4\sqrt{5x} \cdot \sqrt{5x^2}$$

similar to  
# 18 & 19 on Quiz

$$29) 3\sqrt{3} + 3\sqrt{3}$$

$$30) 2\sqrt{5} - 3\sqrt{5}$$

$$31) -2\sqrt{2} - 3\sqrt{18}$$

$$32) 2\sqrt{2} - 3\sqrt{8}$$

$$33) 3\sqrt{3} - 3\sqrt{12}$$

$$34) -\sqrt{27} - 2\sqrt{3}$$

similar to  
# 20

$$35) \sqrt{6}(\sqrt{3} + \sqrt{5})$$

$$36) \sqrt{6}(\sqrt{2} + 4)$$

$$37) \sqrt{5}(4 + \sqrt{5})$$

$$38) \sqrt{3}(5 + \sqrt{6})$$

$$39) (2 + \sqrt{5})(-1 + \sqrt{5})$$

$$40) (3\sqrt{2} - 1)(\sqrt{2} - 3)$$

similar to  
# 21

$$41) (\sqrt{3} + 5\sqrt{2})(\sqrt{3} + \sqrt{2})$$

$$42) (-5 - 3\sqrt{3})(2 + \sqrt{3})$$

$$43) (\sqrt{5} + \sqrt{3})(5\sqrt{5} - \sqrt{5})$$

$$44) (-3\sqrt{2} - 5)(4\sqrt{2} - 5)$$

similar to # 22 &  
23

$$45) \frac{2}{\sqrt{5} + \sqrt{3}}$$

$$46) \frac{\sqrt{3}}{\sqrt{2} - \sqrt{3}}$$

$$47) \frac{3}{\sqrt{3} - \sqrt{2}}$$

$$48) \frac{-5}{\sqrt{7} - \sqrt{2}}$$

$$49) \frac{-4}{\sqrt{3} - \sqrt{5}}$$

$$50) \frac{3}{\sqrt{2} + \sqrt{3}}$$

Find the missing side of each right triangle. Round your answers to the nearest tenth if necessary.

1)  $a = 5$  mi,  $b = 12$  mi

13 mi

3)  $b = 12$  ft,  $c = 13$  ft

5 ft

2)  $a = 6$  m,  $b = 8$  m

10 m

4)  $b = 12$  cm,  $c = 15$  cm

9 cm

State if the three sides lengths form a right triangle.

5) 5 cm, 12 cm, 13 cm

Yes

6) 6 cm, 8 cm, 12 cm

No

7) 11 km, 12 km, 15 km

No

8) 8 mi, 12 mi, 13 mi

No

Simplify each radical expression.

1)  $\sqrt{48x^2}$

$4x\sqrt{3}$

3)  $\sqrt{32a^4}$

$4a^2\sqrt{2}$

5)  $-5\sqrt{150x^4}$

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

7)  $(\sqrt{81})^2 = 81$

9)  $-7\sqrt{125n^3}$

$-35n\sqrt{5n}$

11)  $\frac{\sqrt{5}}{\sqrt{125}} \cdot \frac{1}{5}$

13)  $\frac{\sqrt{6}}{\sqrt{4}} \cdot \frac{\sqrt{6}}{2}$

15)  $\frac{\sqrt{2b^2}}{\sqrt{3b}} \cdot \frac{\sqrt{6b}}{3}$

17)  $\frac{\sqrt{8k^2}}{\sqrt{6k}} \cdot \frac{2\sqrt{3k}}{3}$

19)  $\frac{\sqrt{4p^4}}{\sqrt{3p^4}} \cdot \frac{2\sqrt{3}}{3}$

21)  $\sqrt{3x^3} \cdot \sqrt{15x^3}$

$3x^3\sqrt{5}$

23)  $\sqrt{5n} \cdot \sqrt{5n}$

$5n$

2)  $\sqrt{192x^3}$

$8x\sqrt{3x}$

4)  $3\sqrt{72n^2}$

$18n\sqrt{2}$

6)  $-8\sqrt{72x}$

$-48\sqrt{2x}$

8)  $3\sqrt{90b^5}$

$9b^2\sqrt{10b}$

10)  $-9x\sqrt{63x^5}$

$-27x^3\sqrt{7x}$

12)  $\frac{\sqrt{4}}{\sqrt{25}} \cdot \frac{2}{5}$

14)  $\frac{\sqrt{20}}{\sqrt{36}} \cdot \frac{\sqrt{5}}{3}$

16)  $\frac{\sqrt{9v^4}}{\sqrt{6v}} \cdot \frac{v\sqrt{6v}}{2}$

18)  $\frac{\sqrt{4x^3}}{\sqrt{5x^3}} \cdot \frac{2\sqrt{5}}{5}$

20)  $\frac{\sqrt{3r^2}}{\sqrt{2r^3}} \cdot \frac{\sqrt{6r}}{2r}$

22)  $\sqrt{6x^3} \cdot \sqrt{6x^3}$

$6x^3$

24)  $\sqrt{12v^2} \cdot \sqrt{6v^3}$

$6v^2\sqrt{2v}$

$$25) \sqrt{10x^3} \cdot -5\sqrt{6x}$$

$$-10x^2\sqrt{15}$$

$$27) 4\sqrt{10p} \cdot \sqrt{5p^2}$$

$$20p\sqrt{2p}$$

$$29) 3\sqrt{3} + 3\sqrt{3}$$

$$6\sqrt{3}$$

$$31) -2\sqrt{2} - 3\sqrt{18}$$

$$-11\sqrt{2}$$

$$33) 3\sqrt{3} - 3\sqrt{12}$$

$$-3\sqrt{3}$$

$$35) \sqrt{6}(\sqrt{3} + \sqrt{5})$$

$$3\sqrt{2} + \sqrt{30}$$

$$37) \sqrt{5}(4 + \sqrt{5})$$

$$4\sqrt{5} + 5$$

$$39) (2 + \sqrt{5})(-1 + \sqrt{5})$$

$$3 + \sqrt{5}$$

$$41) (\sqrt{3} + 5\sqrt{2})(\sqrt{3} + \sqrt{2})$$

$$13 + 6\sqrt{6}$$

$$43) (\sqrt{5} + \sqrt{3})(5\sqrt{5} - \sqrt{5})$$

$$20 + 4\sqrt{15}$$

\* WORK  
Attached for #45-50.

$$45) \frac{2}{\sqrt{5} + \sqrt{3}} \quad \sqrt{5} - \sqrt{3}$$

$$47) \frac{3}{\sqrt{3} - \sqrt{2}} \quad 3\sqrt{3} + 3\sqrt{2}$$

$$49) \frac{-4}{\sqrt{12} + \sqrt{20}} \quad \sqrt{3} - \sqrt{5}$$

$$26) 3\sqrt{10x} \cdot \sqrt{5x}$$

$$15x\sqrt{2}$$

$$28) -4\sqrt{5x} \cdot \sqrt{5x^2}$$

$$-20x\sqrt{x}$$

$$30) 2\sqrt{5} - 3\sqrt{5}$$

$$-\sqrt{5}$$

$$32) 2\sqrt{2} - 3\sqrt{8}$$

$$-4\sqrt{2}$$

$$34) -\sqrt{27} - 2\sqrt{3}$$

$$-5\sqrt{3}$$

$$36) \sqrt{6}(\sqrt{2} + 4)$$

$$2\sqrt{3} + 4\sqrt{6}$$

$$38) \sqrt{3}(5 + \sqrt{6})$$

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

$$40) (3\sqrt{2} - 1)(\sqrt{2} - 3)$$

$$9 - 10\sqrt{2}$$

$$42) (-5 - 3\sqrt{3})(2 + \sqrt{3})$$

$$-19 - 11\sqrt{3}$$

$$44) (-3\sqrt{2} - 5)(4\sqrt{2} - 5)$$

$$1 - 5\sqrt{2}$$

$$46) \frac{\sqrt{3}}{2 - \sqrt{3}} \quad \frac{2\sqrt{6}}{-1} \text{ or } -2\sqrt{6}$$

$$48) \frac{-5}{\sqrt{7} - \sqrt{2}} \quad \sqrt{7} - \sqrt{2}$$

$$50) \frac{3}{\sqrt{2} + \sqrt{3}} \quad -3\sqrt{2} + 3\sqrt{3}$$

$$45) \frac{2}{(\sqrt{5}+\sqrt{3})} \cdot \frac{(\sqrt{5}-\sqrt{3})}{(\sqrt{5}-\sqrt{3})} = \frac{2\sqrt{5}-2\sqrt{3}}{5-3} = \frac{2\sqrt{5}-2\sqrt{3}}{2}$$

$$\rightarrow \frac{2\sqrt{5}-2\sqrt{3}}{2} = \sqrt{5}-\sqrt{3}$$

$$46) \frac{\sqrt{3}}{(\sqrt{2}-\sqrt{3})} \cdot \frac{(\sqrt{2}+\sqrt{3})}{(\sqrt{2}+\sqrt{3})} = \frac{\sqrt{6}+\sqrt{9}}{2-3} = \frac{\sqrt{6}+3}{-1} \text{ or } \underline{\underline{-\sqrt{6}+3}}$$

$$47) \frac{3}{(\sqrt{3}-\sqrt{2})} \cdot \frac{(\sqrt{3}+\sqrt{2})}{(\sqrt{3}+\sqrt{2})} = \frac{3\sqrt{3}+3\sqrt{2}}{3-2} = 3\sqrt{3}+3\sqrt{2}$$

$$48) \frac{-5}{(\sqrt{7}-\sqrt{2})} \cdot \frac{(\sqrt{7}+\sqrt{2})}{(\sqrt{7}+\sqrt{2})} = \frac{-5\sqrt{7}-5\sqrt{2}}{7-2} = \frac{-5\sqrt{7}}{5} + \frac{-5\sqrt{2}}{5}$$

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

$$49) \frac{-4}{(\sqrt{12}+\sqrt{20})} \cdot \frac{(\sqrt{12}-\sqrt{20})}{(\sqrt{12}-\sqrt{20})} = \frac{-4\sqrt{12}+4\sqrt{20}}{12-20} = \frac{-4\sqrt{3}+4\sqrt{5}}{-8}$$

$$\rightarrow \frac{-8\sqrt{3}+8\sqrt{5}}{-8} = \sqrt{3}-\sqrt{5}$$

$$50) \frac{3}{(\sqrt{2}+\sqrt{3})} \cdot \frac{(\sqrt{2}-\sqrt{3})}{(\sqrt{2}-\sqrt{3})} = \frac{3\sqrt{2}-3\sqrt{3}}{2-3} = \frac{3\sqrt{2}-3\sqrt{3}}{-1}$$

$$\downarrow \frac{3\sqrt{2}}{-1} + \frac{-3\sqrt{3}}{-1} = \boxed{-3\sqrt{2}+3\sqrt{3}}$$

\* Tricky  $\Rightarrow$  WATCH YOUR SIGNS