

Dear Students,

Welcome to summer! I hope your summer will be wonderful.

Next year you will be taking Geometry, which was my favorite class in high school. In order to do some of the problems in Geometry, you have to have a solid understanding of radicals. Radicals are covered in Algebra, so your job this summer is to review how to simplify them and do operations with them.

I will give you three homework credits for your math packet if you complete it by **showing your work, checking (actually show your checks), and re-working the problems you get wrong on second sheet of paper**. I will give you a quiz during the end of the first week to see how well you mastered them. Please follow the directions on the worksheet.

Here are some videos you can watch if you have forgotten what to do:

Simplifying radicals:

<https://www.youtube.com/watch?v=2mejAHKMBiM>

Adding and Subtracting radicals:

<https://www.youtube.com/watch?v=52zTvDCsdZI>

Multiplying radicals:

<https://www.youtube.com/watch?v=rJUEkquiIw0>

Dividing radicals:

<https://www.youtube.com/watch?v=wyV2b6MPMow>

Have a wonderful summer!

Mrs. Sturgill

Summer Review for Students Entering Geometry

Date _____ Period _____

Simplify. Show your work. Here is a possible method: 1) Write the prime factorization. 2) Circle the pairs 3) For each circle, put the number outside of the radical. 4) Multiply the number outside of the radical together. Multiply the uncircled numbers under the radical together.

1) $\sqrt{810}$

Prime factorization: $2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 5$

Handwritten work shows: $\sqrt{2 \cdot (3 \cdot 3) \cdot (3 \cdot 3) \cdot 5}$

Result: $9\sqrt{10}$

2) $\sqrt{160}$

3) $\sqrt{81}$

4) $\sqrt{324}$

5) $\sqrt{32}$

6) $\sqrt{98}$

7) $\sqrt{1000}$

8) $\sqrt{512}$

Simplify.

9) $4\sqrt{108}$

10) $2\sqrt{400}$

Handwritten work for 9: $4\sqrt{(2 \cdot 2) \cdot (3 \cdot 3) \cdot 3}$

Handwritten work for 9: $4 \cdot 2 \cdot 3 \cdot \sqrt{3}$

11) $7\sqrt{324}$

12) $5\sqrt{48}$

13) $8\sqrt{196}$

14) $10\sqrt{100}$

Simplify. 1) Simplify the radicals by taking out and factors that are perfect squares. 2) Simplify the fractions of the whole numbers. 3) Simplify the fractions of the numbers inside the radicals. 4) Rationalize the denominator.

$$15) \frac{5}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{5\sqrt{5}}{5} = \textcircled{\sqrt{5}}$$

$$16) \frac{\sqrt{7}}{4\sqrt{5}}$$

$$17) \frac{\sqrt{4}}{3\sqrt{7}}$$

$$18) \frac{\sqrt{4}}{3\sqrt{3}}$$

$$19) \frac{5\sqrt{3}}{\sqrt{18}}$$

$$20) \frac{2\sqrt{28}}{2\sqrt{42}}$$

$$21) -\frac{4}{\sqrt{2}}$$

$$22) \frac{3\sqrt{2}}{\sqrt{10}}$$

Simplify.

$$23) \frac{\sqrt{15}}{\sqrt{80}} = \frac{\sqrt{3}}{\sqrt{16}} = \textcircled{\frac{\sqrt{3}}{4}}$$

$$24) \frac{\sqrt{25}}{\sqrt{9}}$$

$$25) \frac{\sqrt{4}}{4\sqrt{100}}$$

$$26) \frac{\sqrt{16}}{4\sqrt{9}}$$

$$27) \frac{\sqrt{10}}{\sqrt{4}}$$

$$28) \frac{\sqrt{15}}{4\sqrt{80}}$$

Simplify. 1) Multiply the radicals. 2) Simplify the radical. 3) Multiply the coefficients.

$$29) \sqrt{6} \cdot 3\sqrt{3} \quad \sqrt{6} \cdot \sqrt{3} = \sqrt{18}$$

\downarrow
 $3\sqrt{2}$

$$30) \sqrt{2} \cdot \sqrt{5}$$

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

$$3 \cdot 3\sqrt{2}$$

$\circlearrowleft 9\sqrt{2}$

$$32) \sqrt{15} \cdot \sqrt{25}$$

$$33) -5\sqrt{3} \cdot \sqrt{6}$$

$$34) \sqrt{12} \cdot -2\sqrt{6}$$

$$35) -2\sqrt{8} \cdot -4\sqrt{8}$$

$$36) -5\sqrt{3} \cdot \sqrt{3}$$

Simplify. 1) Simplify the radicals. 2) If radicals are similar, combine the coefficients.

$$37) -2\sqrt{20} + 3\sqrt{12} - 2\sqrt{45}$$

$\downarrow \quad \downarrow \quad \downarrow$
 $-2 \cdot 2\sqrt{5} + 3 \cdot 2\sqrt{3} - 2 \cdot 3\sqrt{5}$
 $-4\sqrt{5} + 6\sqrt{3} - 6\sqrt{5}$
 $\circlearrowleft -10\sqrt{5} + 6\sqrt{3}$

$$38) -3\sqrt{20} - 2\sqrt{18} - 2\sqrt{8}$$

$$39) -3\sqrt{18} - \sqrt{45} - 3\sqrt{45}$$

$$40) -3\sqrt{2} - 3\sqrt{18} - \sqrt{2}$$

$$41) -\sqrt{3} + 2\sqrt{12} - \sqrt{3}$$

$$42) -2\sqrt{20} + 3\sqrt{54} - \sqrt{24}$$

$$43) 2\sqrt{2} - \sqrt{18} + 2\sqrt{2}$$

$$44) -3\sqrt{5} + 2\sqrt{45} + 2\sqrt{45}$$

Answers to Summer Packet (ID: 1)

1) $9\sqrt{10}$

5) $4\sqrt{2}$

9) $24\sqrt{3}$

13) 112

17) $\frac{2\sqrt{7}}{21}$

21) $-2\sqrt{2}$

25) $\frac{1}{20}$

29) $9\sqrt{2}$

33) $-15\sqrt{2}$

37) $-10\sqrt{5} + 6\sqrt{3}$

41) $2\sqrt{3}$

2) $4\sqrt{10}$

6) $7\sqrt{2}$

10) 40

14) 100

18) $\frac{2\sqrt{3}}{9}$

22) $\frac{3\sqrt{5}}{5}$

26) $\frac{1}{3}$

30) $\sqrt{10}$

34) $-12\sqrt{2}$

38) $-6\sqrt{5} - 10\sqrt{2}$

42) $-4\sqrt{5} + 7\sqrt{6}$

3) 9

7) $10\sqrt{10}$

11) 126

15) $\sqrt{5}$

19) $\frac{5\sqrt{6}}{6}$

23) $\frac{\sqrt{3}}{4}$

27) $\frac{\sqrt{10}}{2}$

31) -6

35) 64

39) $-9\sqrt{2} - 12\sqrt{5}$

43) $\sqrt{2}$

4) 18

8) $16\sqrt{2}$

12) $20\sqrt{3}$

16) $\frac{\sqrt{35}}{20}$

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

24) $\frac{5}{3}$

28) $\frac{\sqrt{3}}{16}$

32) $5\sqrt{15}$

36) -15

40) $-13\sqrt{2}$

44) $9\sqrt{5}$