**Estimating Square Roots**

**1.** Explain what a perfect square is.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.** Complete the table below by listing the first 15 perfect squares and their square roots.

|  |  |
| --- | --- |
| ***Perfect Squares*** |  |
| 1 | $\sqrt{1}$=  |
| 4 | $\sqrt{4}$**=** |
|  | $\sqrt{9 }$= |
|  | $\sqrt{16}$ = |
|  | $\sqrt{25}$ = |
|  | $\sqrt{36}$ = |
|  | $\sqrt{49}$ = |
|  | $\sqrt{64}$ = |
|  | $\sqrt{81}$ = |
|  | $\sqrt{100}$ = |
|  | $\sqrt{121}$ = |
|  | $\sqrt{144}$ = |
|  | $\sqrt{169}$ = |
|  | $\sqrt{196}$ = |
|  | $\sqrt{225}$ = |

**3.** You can approximate the value of non-perfect squares using what you know about perfect squares.

Between which two perfect squares would you find the number 65? \_\_\_\_\_and \_\_\_\_\_

What are their square roots? \_\_\_\_\_ and \_\_\_\_\_

 Knowing that, between which two integers would you find? \_\_\_\_\_and \_\_\_\_\_ Approximate $\sqrt{65}$ to the nearest tenth then check yourself with a calculator.

**4.** Without using your calculator, approximate the value of each of the following square roots by identifying the perfect squares the radicand falls between.

 is between $\sqrt{}$ and $\sqrt{}$ .Therefore, it is between the integers \_\_\_\_\_ and \_\_\_\_\_.

  is between $\sqrt{}$ and $\sqrt{}$ .Therefore, it is between the integers \_\_\_\_\_ and \_\_\_\_\_.

  is between $\sqrt{}$ and $\sqrt{}$ .Therefore, it is between the integers \_\_\_\_\_ and \_\_\_\_\_.

 is between $\sqrt{}$ and $\sqrt{}$ .Therefore, it is between the integers \_\_\_\_ and \_\_\_\_\_.

–is between $\sqrt{}$ and $\sqrt{}$ .Therefore, it is between the integers \_\_\_\_ and \_\_\_\_\_.

 –is between $\sqrt{}$ and $\sqrt{}$ .Therefore, it is between the integers \_\_\_\_ and \_\_\_\_\_.

**5.** Write instructions on how to estimate the square root of a number that is not a perfect square.

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**6.** Tricia estimates that  is about eight. Do you agree or disagree? Explain.

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**7.** Is more or less than 6? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8.** Is 9.5 a good first guess for $\sqrt{75}$ ? Why or why not?

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