**Answers:**

**Part A:** Color the box GREEN if the given number is a perfect square and RED if it is not.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1) | $$99$$ |  |  | 2) | $$-9$$ |
|  | 3) | $$100$$ |  |  | 4) | $$81$$ |
|  | 5) | $$441$$ |  |  | 6) | $$625$$ |

**Part B:** Find the value of the following.

|  |  |  |  |
| --- | --- | --- | --- |
| 1) | $$\pm \sqrt{25}=\pm 5$$ | 2) | $$\sqrt{-25}=undefined$$ |
| 3) | $$\sqrt{1600}=40$$ | 4) | $$\sqrt{121}=11$$ |
| 5) | $$\sqrt{-1}=undefined$$ | 6) | $$\pm \sqrt{1}=\pm 1$$ |
| 7) | $$\pm \sqrt{196}=\pm 14$$ | 8) | $$\sqrt{40000}=200$$ |
| 9) | $$\sqrt{225}=15$$ | 10) | $$\sqrt{-100}=undefined$$ |

**Part C:** Find two consecutive integers between which $\sqrt{66}$ lies.

The radicand is 66.

The closest perfect square number

less than 66 is 64.

The closest perfect square number

greater than 66 is 81.

$$\sqrt{64}<\sqrt{66}<\sqrt{81}$$

$$8<\sqrt{66}<9$$

The square root of $\sqrt{65}$ is between 8 and 9.

**Part D:** Find two rational numbers with two decimal places between which $\sqrt{66}$ lies.

Since 66 is between 64 and 81, $\sqrt{66}$ must be between $\sqrt{64}$ and $\sqrt{81.}$65$\sqrt{64}<\sqrt{66}<\sqrt{81}$

$$8<\sqrt{66}<9$$

By estimation, we have:

**So,** $\sqrt{66}$ **lies between 8.1 and 8.2.**

|  |
| --- |
| $$8.1^{2}=65.61$$ |
| $$8.2^{2}=67.24$$ |

To find the two rational numbers with two decimal places between which $\sqrt{66}$ lies, let’s estimate further:

**So,** $\sqrt{5}$ **lies between 8.12 and 8.13.**

|  |
| --- |
| $$8.11^{2}=65.7721$$ |
| $$8.12^{2}=65.9344$$ |
| $$8.13^{2}=66.0969$$ |

The square root of $\sqrt{66}$ is between

**Part E:** Approximate $\sqrt{66}$ up to the fourth estimate.

Since 66 is between 64 and 81, $\sqrt{66}$ must be between $\sqrt{64}$ and $\sqrt{81.}$

$$\sqrt{64}<\sqrt{66}<\sqrt{81}$$

$$8<\sqrt{66}<9$$

Step 1: The integer closest to $\sqrt{66}$ is 8.

The first estimate is 8.

Step 2: Divide the radicand by the first estimate.

$$66÷8=8.25$$

Step 3: To find the second estimate, find the average of the quotient in Step 2 and the first estimate.

$$\frac{8.25+8}{2}=\frac{16.25}{2}=8.125$$

The second estimate is 8.125.

Step 4: Repeat Step 2. But this time, divide the radicand by the second estimate.

$$66÷8.125≈8.123$$

Step 5: To find the third estimate, repeat Step 3. This time, find the average of the quotient in Step 4 and the second estimate.

$$\frac{8.123+8.125}{2}=\frac{16.248}{2}=8.124$$

The third estimate is 8.124.

Step 6: Repeat Step 2. But this time, divide the radicand by the third estimate.

$$66÷8.124≈8.124$$

Step 5: To find the fourth estimate, repeat Step 3. This time, find the average of the quotient in Step 4 and the third estimate.

$$\frac{8.123+8.124}{2}=\frac{16.247}{2}=8.1235$$

The closest approximate of $\sqrt{66} $is 8.1235.