Approximations of Irrational Numbers - Guided Lesson Explanation

Explanation#1

Step 1) First we look to see what is being asked of us.
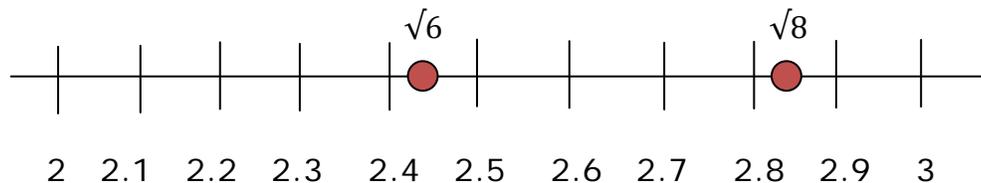
```
|++++++++++++++|    |    |    |    |    |    |    |    |
36    37    38    39    40    41    42    43    44    45    50
```

36 is the nearest whole number multiple (6) of 38. We know that √38 is between 6 and 7. Because we only need to go to the tenths place, we could work from a list of the possible multiples.

6.1^2 = 37.21 (0.79 away from 38)

6.2^2 = 38.44 (0.44 away from 38)

√38 is closest to 6.2.

Explanation#2

```
                    √6              √8
|    |    |    |    ●    |    |    |    ●    |    |
2   2.1  2.2  2.3  2.4  2.5  2.6  2.7  2.8  2.9   3
```

Statement for the comparison could include:

√6 and √8 are between the whole numbers 2 and 3

√6 is between 2.4 and 2.5 and √8 is between 2.8 and 2.9

√6 is less than √8

√8 is greater than √6

Explanation#3

Step 1) First we look to see what is being asked of us.

```
|||||||||||||||||||||||||    |       |       |       |       |       |       |       |       |
49      50      51      52      53      54      55      56      57      58      59
```

49 is the nearest number multiple (7) of 51.

So the number is between 7 and 8.

Because we only need to go to the tenths place, we could work from a list of the possible multiples.

$7.1^2 = 50.41$ (0.59 away from 51)

$7.2^2 = 51.84$ (0.84 away from 51)

$\sqrt{51}$ is closest to 7.1.