## Lesson 10: Solve Problems with Decimals

- Let's round and order decimals to solve problems.


## Warm-up: Notice and Wonder: The Luge

What do you notice? What do you wonder?


| $A$ | $B$ |
| :---: | :---: |
| 48.532 | 82.13 |
| 48.561 | 82.75 |
| 48.626 | 82.81 |
| 48.634 | 83.07 |
| 48.708 | 82.80 |

## 10.1: How Accurate Is It?

| athlete | time (seconds) | speed (mph) |
| :---: | :---: | :---: |
| Athlete 1 | 48.532 | 82.13 |
| Athlete 2 | 48.561 | 82.75 |
| Athlete 3 | 48.626 | 82.81 |
| Athlete 4 | 48.634 | 83.07 |
| Athlete 5 | 48.708 | 82.80 |

1. How would the results of the race change if the times were recorded to the nearest second?
2. How would the results of the race change if the times were recorded to the nearest tenth of a second?
3. How would the results of the race change if the times were recorded to the nearest hundredth of a second?
4. An athlete recorded a time of 48.85 seconds to the nearest hundredth of a second. What are the possible times of this athlete recorded to the thousandth of a second?
5. An athlete recorded a time of 48.615 seconds to the nearest thousandth of a second. What are the possible times that this athlete recorded to the nearest hundredth of a second?

## 10.2: Compare Speeds

The table shows the top speeds, in miles per hour, of 5 luge athletes:

| athlete | speed (miles per hour) |
| :---: | :---: |
| Athlete 1 | 82.13 |
| Athlete 2 | 82.75 |
| Athlete 3 | 82.81 |
| Athlete 4 | 83.07 |
| Athlete 5 | 82.80 |

1. List the top speeds of the athletes in decreasing order.
2. Do any of the athletes have the same top speed rounded to the nearest tenth of a mile per hour? What about rounded to the nearest mile per hour?
3. There was a sixth athlete who was faster than the rider at 82.80 mph , but slower than the rider at 82.81 mph . What could the speeds of the 3 athletes be if all measured to the nearest thousandth of a mile per hour?

## Section Summary

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In this section, we represented decimals to the thousandths place.


The shaded region of the diagram represents 0.542 . The 5 shaded rows are each a tenth or 0.1 , the 4 shaded small squares are each a hundredth or 0.01 , and the 2 shaded tiny rectangles are each a thousandth or 0.001 . The decimal 0.542 can be represented in other ways

- $\frac{542}{1,000}$
- five hundred forty-two thousandths
- $(5 \times 0.1)+(4 \times 0.01)+(2 \times 0.001)$

We can also locate 0.542 on a number line.


The number line shows that 0.542 is closer to 0.54 than to 0.55 so 0.542 rounded to the nearest hundredth is 0.54 .

