



# 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 |

## Activity 1

### How Accurate Is It?

The table shows the race times for 5 luge athletes.

| athlete   | time (seconds) |
|-----------|----------------|
| Athlete 1 | 48.532         |
| Athlete 2 | 48.561         |
| Athlete 3 | 48.626         |
| Athlete 4 | 48.634         |
| Athlete 5 | 48.708         |

1. How would the results of the race change if the times were recorded to the nearest second?

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2. How would the results of the race change if the times were recorded to the nearest tenth of a second?

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3. How would the results of the race change if the times were recorded to the nearest hundredth of a second?

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4. An athlete records a time of 48.85 seconds to the nearest hundredth of a second. What could that time be if it was recorded to the thousandth of a second?
5. An athlete records a time of 48.615 seconds to the nearest thousandth of a second. What could that time be if it was recorded to the nearest hundredth of a second?

## Activity 2

### Compare Speeds

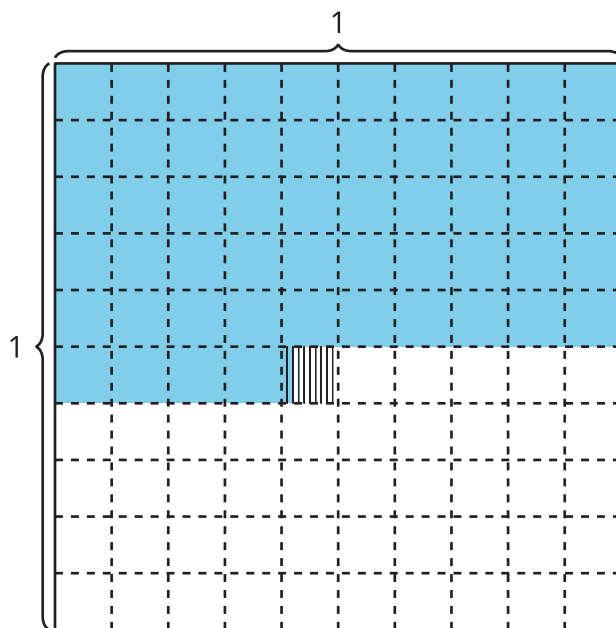
The table shows the top speeds of 5 luge athletes.

| 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 speeds in decreasing order.
2. Do any of these athletes have the same top speed if rounded to the nearest tenth of a mile per hour? To the nearest mile per hour?
3. A sixth athlete's top speed is faster than Athlete 5's but slower than Athlete 3's. What could the top speeds of these 3 athletes be if they were each measured to the nearest thousandth of a mile per hour?

## Section A Summary

We represented decimals to the thousandths place.



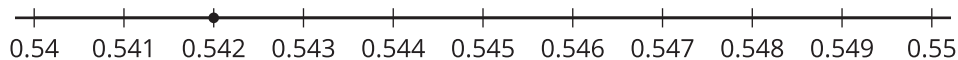
The shaded region of the diagram represents 0.542.

- The 5 shaded rows are each a tenth or 0.1
- The 4 shaded small squares are each a hundredth or 0.01.
- 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 also learned how to 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.