



Metric Conversion and Division by Powers of 10

Let's convert units.

Warm-up

True or False: Divide by a Hundred and by a Thousand

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $5 \div 1,000 = 0.05$
- $36 \div 100 = 0.36$
- $1,328 \div 1,000 = 1.328$

Activity 1

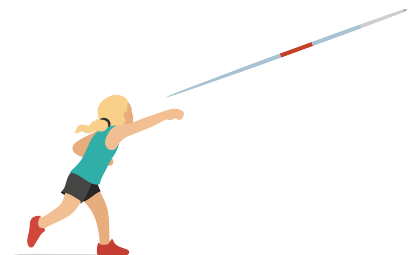
Long Jump, Javelin Throw, and Shot Put

| athlete | long jump | javelin throw | shot put |
|---------------------------|-----------|---------------|----------|
| Jackie Joyner-Kersey, USA | 727 cm | 4,566 cm | 1,580 cm |
| Sabine John, East Germany | 671 cm | 4,256 cm | 1,623 cm |
| Anke Behmer, East Germany | 678 cm | 4,454 cm | 1,420 cm |

- At the 1988 Summer Olympics, Jackie Joyner-Kersey set the still-standing world record in the heptathlon, which is a combination of 7 track-and-field events. These are the results, in centimeters, of some of the events, showing the first-, second-, and third-place athletes. Complete the table to show Joyner-Kersey's distances in meters.

| event | centimeters | meters |
|---------------|-------------|--------|
| long jump | 727 | |
| javelin throw | 4,566 | |
| shot put | 1,580 | |

- Which unit of measure, centimeters, or meters, is most helpful when you picture each distance? Explain or show your reasoning.
- Why do you think distances are measured to the nearest centimeter?



Activity 2

Hurdles

1. The table shows how many meters students ran during a week. Complete the table to show these distances in kilometers.

| student | distance (meters) | distance (kilometers) |
|---------|-------------------|-----------------------|
| Diego | 9,513 | |
| Clare | 11,018 | |
| Priya | 8,210 | |
| Andre | 10,000 | |

2. What patterns do you notice in the table?



3. This is Tyler's strategy to divide a whole number by 10, by 100, or by 1,000.

I find the quotient by shifting the digits to the right — once when I divide by 10, twice when I divide by 100, 3 times when I divide by 1,000.

$$5,632 / 10 = 563.2$$

$$5,632 / 100 = 56.32$$

$$5,632 / 1,000 = 5.632$$

Describe Tyler's strategy to your partner.

(Pause for teacher direction.)

4. Why does Tyler's strategy work? Does Tyler's strategy always work? Explain or show your reasoning.