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Compound Inequalities

$$4ft\ 7inch \leq x < 6ft\ 3inch$$

① **Write an inequality to describe the situation.**

② Simplify the following inequalities.

③ Decide which number line belongs to which compound inequality.

④ Solve the inequality.

⑤ Determine the opposite inequality.

⊕ with lots of tips, answer keys, and detailed answer explanations for all of the problems.
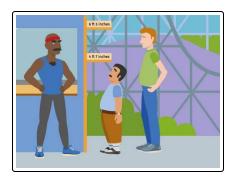
⚠ The complete package, **including all problems, hints, answers, and detailed answer explanations** is available for all sofatutor.com subscribers.

Write an inequality to describe the situation.

Fill in the blanks.

Jerry and Larry want to ride the roller coaster, but there is a little problem concerning their heights.

You're only allowed to ride the roller coaster if you are at least 4 feet 7 inches and shorter than 6 feet 3 inches.

| $6\ ft\ 3\ inch$ | | $4\ ft\ 7\ inch$ | | $>$ | | $4\ ft\ 7\ inch$ | | $\leq$ | | $\geq$ | | $<$ |

| $6\ ft\ 3\ inch$ | | $\leq$ |

At least 4 feet 7 inches can be written mathematically as:

$\underline{\hspace{8cm}}_1 \underline{\hspace{6cm}}_2 x$

Shorter than 6 feet 3 inches can be written as:

$x \underline{\hspace{6cm}}_3 \underline{\hspace{6cm}}_4$

Combining these expressions together gives us the compound inequality:

$\underline{\hspace{7cm}}_5 \underline{\hspace{6cm}}_6 x \quad <$

$\underline{\hspace{6cm}}_7$

Hints for solving these problems

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Write an inequality to describe the situation.

Hint #1

The phrases **less than**, **at most**, **between**, **more than**, or **at least** have special meanings in math.

Hint #2

For example, **more than** means $>$. The equal sign is not included.

Hint #3

At most 10 means ≤ 10 and 10 is included.

Answers and detailed answer explanations for these problems

Write an inequality to describe the situation.

Answer key: 1: $4\ ft\ 7\ inch$ // 2: $\leq$ // 3: $<$ // 4: $6\ ft\ 3\ inch$ // 5: $4\ ft\ 7\ inch$ // 6: $\leq$ // 7: $6\ ft\ 3\ inch$

Jerry and Larry want to ride the rollercoaster. They have a problem with the minimum and maximum height allowed to ride the roller coaster.

- **At least** 4 feet 7 inches can be expressed mathematically using $\geq$. So $x \geq 4$ feet 7 inches or 4 feet 7 inches $\leq x$.
- **Shorter than** 6 feet 3 inches can be expressed as $x < 6$ feet 3 inches.

Combining the two expressions, we get the compound inequality 4 feet 7 inches $\leq x < 6$ feet 3 inches.