At Least, At Most

IN08-V1 · storyboard · IN08 Word problems: at least, at most, more than. Read each picture with its sentences.

Picture 1

I have €230. Books cost €17 each. At most how many can I buy, and still have at least €25?

$$230 - 17n \geq 25$$ at least: ≥

$$17n \leq 205$$

$$n \leq 12\frac{1}{17}$$

$$\boxed{n = 12}$$ whole books: round down

1. I have 230 euros, and books cost 17 euros each.
2. At most how many can I buy, and still have at least 25 euros for dinner?
3. Let n be the number of books.
4. What is left is 230 minus 17 n, and at least means greater than or equal to: it must be at least 25.
5. So 17 n is at most 205.
6. Divide by 17: n is at most 12 and 1 seventeenth.
7. You can only buy whole books, so round down: at most 12 books.
8. Check: 12 books leave 26 euros.

Picture 2

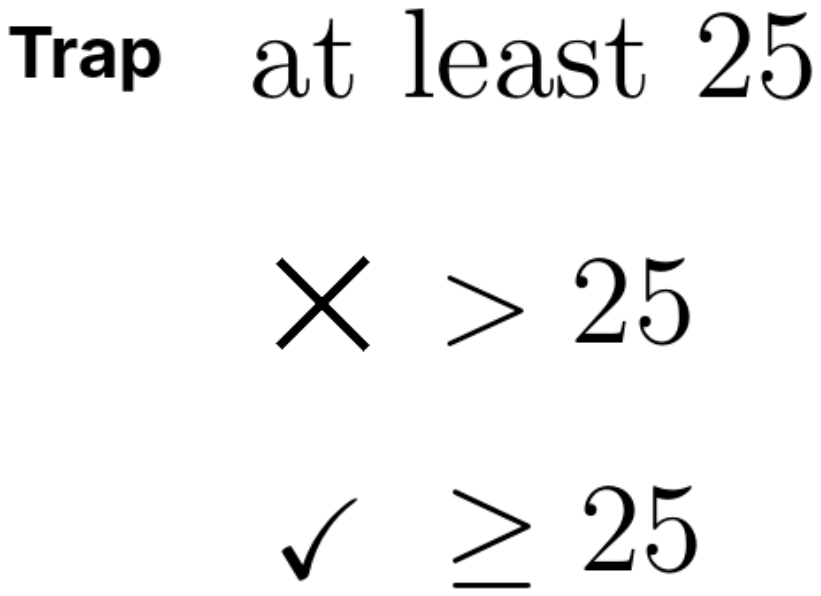
A pool holds $10\,000$ litres and is 80% full at noon. It gains 105 litres an hour. Mitch checks every hour. When does he first see it overflowing?

$$8000 + 105t > 10\,000$$ overflowing: more than full

$$\boxed{t > 19.04\ldots \Rightarrow t = 20}$$ at his checks: round up

9. A pool holds 10 thousand litres, and at noon it is 80 percent full.
10. It gains 105 litres an hour.
11. Mitch checks every hour.
12. When does he first see it overflowing?
13. 80 percent of 10 thousand is 8 thousand.
14. Overflowing means more than 10 thousand: 8 thousand plus 105 t is more than 10 thousand.
15. t is more than 19 point 0 4.
16. At his hourly checks, round up: 20 hours after noon, which is 8 AM the next day.

Picture 3



17. Watch for the trap: at least 25 includes 25 itself.
18. It is greater than or equal to, not greater than.