1. Translate: 'x and y together total at most 14 hours.'

at most = <=

Answer: x + y <= 14

2. Translate: 'earn at least $120 at $6/hr (x) and $12/hr (y).'

at least = >=

Answer: 6x + 12y >= 120

3. Snacks $3 (s), drinks $2 (d), budget at most $18, need at least 4 drinks.

Two conditions

Answer: 3s + 2d <= 18; d >= 4

4. Can s = 2, d = 5 work in the system above?

6 + 10 = 16 <= 18 yes; 5 >= 4 yes

Answer: Yes

5. Can s = 4, d = 4 work?

12 + 8 = 20 <= 18? No

Answer: No

6. A club sells shirts ($10) and hats ($6), wants at least $300, can make at most 40 items.

Value + count conditions

Answer: 10s + 6h >= 300; s + h <= 40

7. In that system: does s = 25, h = 10 work?

250 + 60 = 310 >= 300 yes; 35 <= 40 yes

Answer: Yes

8. Why do real problems often also need x >= 0 and y >= 0?

Can't sell negative items

Answer: quantities can't be negative

9. Babysitting $6/hr (x), tutoring $12/hr (y): at least $120, at most 14 hours total. Write the system and test (

6x + 12y >= 120; x + y <= 14

60 + 60 = 120 yes; 15 <= 14 NO

Answer: system as shown; (10,5) fails the hour cap

10. For that same system, find a combo that DOES satisfy both, and explain your check. ★ challenge

Try (4, 9): 24 + 108 = 132 >= 120

4 + 9 = 13 <= 14

Answer: e.g., 4 sitting + 9 tutoring hours