Equations and Inequalities Problem Solving — Homework

Lesson 8-7 • Standard 6.AT.8

Name: _____ **Period:** _____ **Date:** _____

Today's Goals

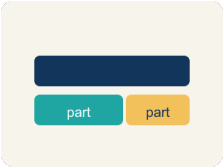
Content: I can model and solve real-world problems using equations and inequalities.

Language: I can explain my reasoning using the words model, equation, inequality, and reasonableness.

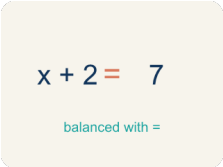
Key Words



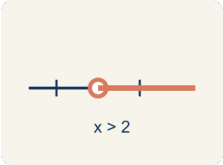
Equations and Inequalities Problem Solving (Resolución de problemas con ecuaciones y desigualdades) — Use an equation for one exact value or an inequality for a range of values in a real situation.



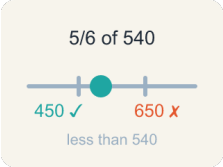
Model (Modelar) — To show a real-life situation with an equation or inequality.



Equation (Ecuación) — A math sentence with an equal sign showing both sides are the same.



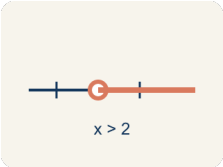
Inequality (Desigualdad) — A math sentence that compares two sides with <, >, ≤, or ≥.



Reasonableness (Razonabilidad) — Checking if your answer makes sense.



Variable (Variable) — A letter that stands for a number that is unknown or can change.



Constraint (Restricción) — A limit in a problem that tells what values are allowed.

Practice

Show your work. Use the blank space under each problem.

1. A museum has some paintings. After adding 12, they have 45. Which equation models this?

A. p + 12 = 45
B. p − 12 = 45
C. 12p = 45
D. p / 12 = 45

2. A detective needs more than 8 hours to finish the investigation. She has already worked 3 hours. Which inequality represents the additional hours h she needs?

A. 3 + h > 8
B. 3 + h = 8
C. h > 3
D. 8 + h > 3

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3. Write a model, solve, and check reasonableness for each problem.

Word Problem	Model	Solution	Reasonable?
Five identical boxes weigh a total of 60 pounds. How much does each box weigh?	5w = 60	w = 12 pounds	Yes — 12 pounds per box is reasonable.
A shelf can hold at most 30 books. There are already 17 books. How many more can be added?	17 + b ≤ 30	b ≤ 13 books	Yes — up to 13 more books fits.
A baker split 84 cookies equally into bags of 12. How many bags did she use?	12b = 84	b = 7 bags	Yes — 7 bags of 12 = 84 cookies.

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4. A student solved 4n = 52 and got n = 13. Is the answer reasonable if n represents the number of notebooks in a box?

A. No — 13 is too many notebooks
B. No — the answer should be 48
C. Yes — 13 notebooks per box is reasonable
D. Yes — but only if n is a fraction

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5. Spot the Common Mistake

Step 1 (Problem): Seven evidence lockers hold 84 case files in all, split equally. How many files per locker?
Step 2 (Model): 7f = 84
Step 3 (Solve): f = 84 − 7 = 77
Step 4 (Answer): 77 files per locker.
Which step has the mistake? Explain and fix it:

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6. Room 1: The case board is a mess. Sort each clue into whether it needs an EQUATION (one exact total) or an INEQUALITY (a limit or range).

Groups: Needs an Equation (=) | Needs an Inequality (<, >, ≤, ≥)

- The ransom was split equally among 5 suspects, giving each $40. → _____
- A number of fingerprints plus 9 equals 21. → _____
- The getaway car held no more than 6 bags of loot. → _____
- The alarm must stay on for at least 30 minutes. → _____
- The witness saw fewer than 4 accomplices. → _____
- Three identical safes hold exactly 75 coins in all. → _____

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7. Room 2: The vault keypad clue reads, 'A number of stolen coins plus 6 equals 14.' Solve $x + 6 = 14$ to find the code x.

A. $x = 2$
B. $x = 6$
C. $x = 8$
D. $x = 20$

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8. Room 3: A sign warns, 'The safe holds at most 20 gold bars.' Which inequality models the number of bars x?

A. $x \leq 20$
B. $x \geq 20$
C. $x > 20$
D. $x = 20$

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9. Room 4: A locked drawer clue reads, 'Five identical evidence boxes weigh 60 pounds in all.' Solve $5w = 60$ for each box's weight w.

A. $w = 12$
B. $w = 55$
C. $w = 65$
D. $w = 300$

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10. Room 5: Match each crime-scene clue to the model the detective should write.

Item	Answer choices
____ The reward divided among 4 detectives gave each $50.	D. $f \geq 25$
____ A number of clues take away 7 leaves exactly 9.	C. $h > 8$
____ The patrol must last more than 8 hours.	B. $c - 7 = 9$, so $c = 16$
____ The locker holds at least 25 files.	A. $4d = 200$, so $d = 50$
