Name & Surname: _____ Class: _____ Date: _____

BALANCE AND SOLVE

One-step equations in real life

About 45 minutes Level ★★★☆☆



KEEP BOTH SIDES EQUAL

An **equation** shows two amounts are equal, like a balanced scale.

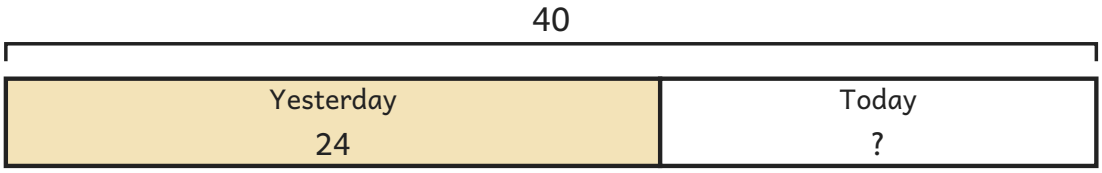
- For x + p = q, undo adding with the **inverse**: subtract p from both sides.
- For px = q, divide both sides by p. Worked **example**: 4x = 20, so x = 20 ÷ 4 = 5.
- Always **check** by putting your answer back into the first equation. Example: 4 × 5 = 20.

TASK A

/6

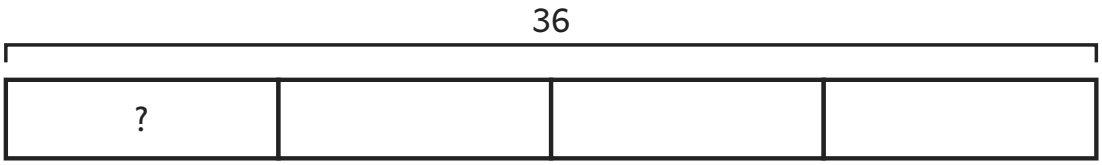
Draw on the bar models to find each missing amount.

1 A student read 24 pages yesterday and some more today. Together that is 40 pages **total**. How many pages were read **today**?



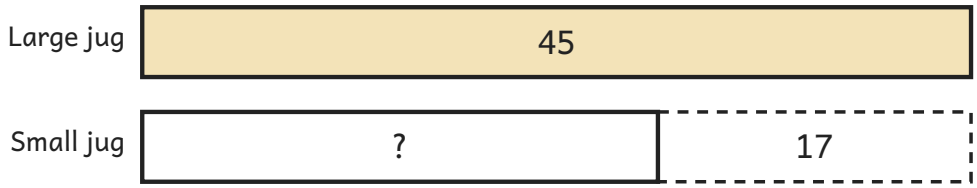
Answer: _____ **pages**

2 36 stickers are shared equally among 4 **friends**. How many stickers does each friend get?



Answer: _____ **stickers**

3 A large jug holds 45 fluid ounces. A small jug holds 17 fluid ounces **fewer**. How much does the small jug **hold**?



Answer: _____ **fluid ounces**

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FIRST PRACTICE ROUND

Practice solving one-step equations with whole numbers, decimals and fractions.

DID YOU KNOW?

Did you know an **equation** stays balanced if you do the same **step** to both sides, just like a scale?

CHALLENGE TIME!

Can you make up two **equations** like x + 4 = 10 with **solution** x = 6? Tell a partner.

KEY WORDS

equation: a statement that two amounts are equal

solution: the value that makes the equation true

balance: both sides stay equal

variable: a letter, like x, that stands for a missing number

inverse operation: the opposite math step that undoes another

check: put the answer back to test it

TASK B

/12

Solve these one-step equations step by step.

WARM UP

1 Solve the **equation** x + 5 = 11

Answer: _____

2 Solve the **equation** x + 7 = 12

Answer: _____

3 Solve the **equation** 4x = 20

Answer: _____

4 Solve the **equation** 3x = 12

Answer: _____

PRACTICE

5 Solve x + 2.5 = 6.5 and show your **check**

Answer: _____

6 Solve $x + \frac{3}{4} = \frac{5}{4}$ for the missing **value**

Answer: _____

7 Solve 5x = 7.5 and give the **solution**

Answer: _____

8 Solve $(\frac{3}{4})x = 6$ for the unknown **number**

Answer: _____

PROBLEM SOLVING

9 A student saved $12, then earned $x doing chores, to have $20 **total**. Solve x + 12 = 20. How many **dollars** were earned?

Answer: _____

10 Three equal packs of pencils cost $9 **total**. If one pack costs $x, solve 3x = 9. What is the **price** of one pack?

Answer: _____

11 **Explain** how you know x = 2 is the **solution** to x + 4.5 = 6.5

Answer: _____

12 A student says to solve 6x = 18, subtract 6 from both sides. **Explain** why this **method** is wrong and give the correct solution.

Answer: _____

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SPOT THE MISTAKES

Find the wrong step and fix two common equation errors.

TASK C

/4

Find the wrong step in each solution and fix it.



Student A

Solve the **equation** x + 4 = 9

1. x + 4 = 9
2. x = 9 + 4
3. x = 13

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student B

Solve the **equation** 5x = 20

1. 5x = 20
2. x = 20 - 5
3. x = 15

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____

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REAL WORLD SOLVING

Solve harder equations and use them in real-life problems.

TASK D

/12

Practice solving harder equations with decimals and fractions.

WARM UP

1 Solve the **equation** x + 6 = 13

Answer: _____

2 Solve the **equation** x + 1.2 = 4.2

Answer: _____

3 Solve the **equation** 2x = 16

Answer: _____

4 Solve $\frac{x}{5} = 3$ for the missing **value**

Answer: _____

PRACTICE

5 Solve $x + \frac{5}{6} = \frac{11}{6}$ for the unknown **number**

Answer: _____

6 Solve x + 3.75 = 8.25 and show your **check**

Answer: _____

7 Solve 6x = 30.6 for the **solution**

Answer: _____

8 Solve $(\frac{2}{3})x = 8$ for the missing **value**

Answer: _____

PROBLEM SOLVING

9 A notebook costs $2.75 and a pen costs $x. The **total** is $5.25. Solve x + 2.75 = 5.25. What is the pen **price**?

Answer: _____

10 A recipe uses $\frac{1}{2}$ cup of sugar per **batch**. Altogether 3 cups are used for x batches, so $(\frac{1}{2})x = 3$. How many **batches** is that?

Answer: _____

11 **Explain** how you know dividing both sides keeps the **balance** in 4x = 24

Answer: _____

12 A bag holds x pounds. After adding $1\frac{1}{2}$ pounds, it holds 4 pounds **total**. Solve $x + 1\frac{1}{2} = 4$. How much was **there** at first?

Answer: _____

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TEST AND NUMBER LINE

Decode an exam question and show solutions on number lines.

TASK E

/4

Decode the exam question before you solve it.

1. Box the command word **2. Underline** the topic **3. Count** the marks: how many points? **4. Plan**, then write

Solve the real-world problem: A club sold tickets at $6 each and collected $48 total. Write the equation 6x = 48 and solve for x. Show your check. (4)

Command word	Topic	Points I need

Write the equation 6x = 48 → Divide both sides by 6 to find x → Give solution x = 8 tickets → Check with 6 × 8 = 48

My answer

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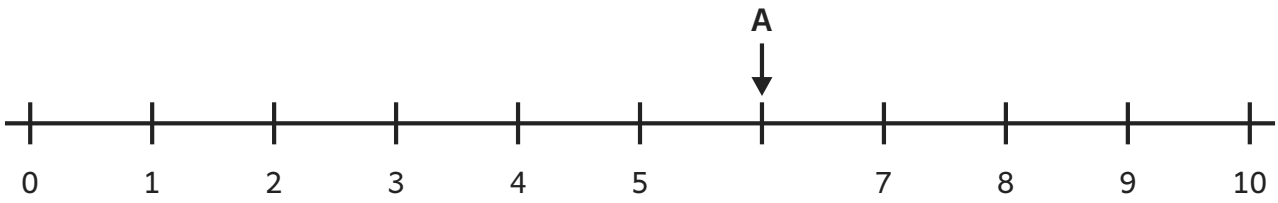
BALANCE AND SOLVE

TASK F

/4

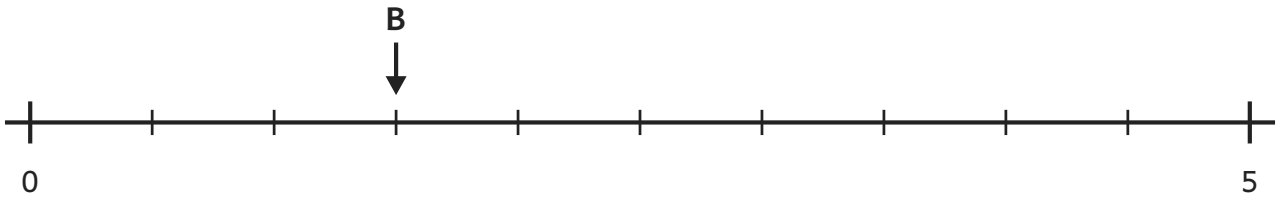
Use the number lines to mark solutions to one-step equations.

1



A = ☐ Draw an arrow to show: 4

2



B = ☐ Draw an arrow to show: $\frac{7}{2}$

HOW DID I DO?

Circle a face for each line.

I can solve equations like x + p = q using subtraction. ☹ 😐 ☺

I can solve equations like px = q using division. ☹ 😐 ☺

I can write and check one-step equations for real-world problems. ☹ 😐 ☺

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Answer sheet: Balance and Solve

Task A

1. 16 pages
2. 9 stickers
3. 28 fluid ounces

Task B

1. $x = 6$
2. $x = 5$
3. $x = 5$
4. $x = 4$
5. $x = 4$
6. $x = \frac{1}{2}$
7. $x = 1.5$
8. $x = 8$
9. 8 dollars
10. 3 dollars
11. $2 + 4.5 = 6.5$, so both sides are equal.
12. You must divide both sides by 6, not subtract. $x = 3$.

Task C

1. Step 2 is wrong: They added 4 instead of subtracting. The inverse of adding 4 is subtracting 4 from both sides. Correct answer: $x = 5$
2. Step 2 is wrong: They subtracted 5 instead of dividing. The inverse of multiplying by 5 is dividing both sides by 5. Correct answer: $x = 4$

Task D

1. $x = 7$
2. $x = 3$
3. $x = 8$
4. $x = 15$
5. $x = 1$
6. $x = 4.5$
7. $x = 5.1$
8. $x = 12$
9. 2.50 dollars
10. 6 batches
11. Both sides stay equal when divided by the same number. $4 \times 6 = 24$.
12. $2\frac{1}{2}$ pounds

Task E

Command word: Solve

Topic: one-step equations with multiplication

Points: Write the equation $6x = 48$; Divide both sides by 6 to find x; Give solution $x = 8$ tickets; Check with $6 \times 8 = 48$

Task F

1. A = 6; arrows at 4
2. B = $\frac{3}{2}$; arrows at $\frac{7}{2}$

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