Unit 16 · Equation

HARDER PRACTICE QUESTIONS

Full marks 34

Write your answers on separate paper. Show your working, one step a line, and write what you do to both sides. Check every answer by putting it back into the equation.

1 Mother and daughter [4]

Barsha is x years old. Her mother is 2 years more than 3 times Barsha's age. Together their ages add up to 46 years.

i. Write the mother's age using x.
ii. Write an equation for their ages together, and simplify its left side.
iii. Solve it. How old are Barsha and her mother?

2 Three numbers in a row [3]

Three whole numbers come one after another, like 6, 7 and 8. They add up to 72. Find them.

3 Bags on a balance [3]

On a level balance, the left pan has 3 equal bags of rice and a 2 kg weight. The right pan has 1 bag of the same rice and a 10 kg weight.

i. Write an equation, with x kg for one bag.
ii. Solve it to find how heavy one bag is.

4 Spot the error [3]

Sushant solved $4x - 5 = 23$ like this: $4x = 23 - 5 = 18$, so $x = 18 \div 4 = 4\frac{2}{4}$.

i. Which step is wrong, and why?
ii. Solve the equation correctly.
iii. Show how the check would have caught his mistake.

5 Which equations fit? [4]

Sabin buys 3 exercise books at Rs. x each and a pen for Rs. 20. He pays with a Rs. 200 note and gets Rs. 30 back.

Which of these equations fit the story? There may be more than one.

A: $3x + 20 = 200$; B: $3x + 20 = 170$; C: $3x + 20 + 30 = 200$; D: $3x = 200 + 20 + 30$

Solve one that fits. What does an exercise book cost?

6 Round a garden [4]

This uses Unit 12 too. A rectangular garden is 4 m longer than it is broad. Its perimeter is 40 m.

i. Let the breadth be x m. Write the length, and an equation for the perimeter.
ii. Solve it. How long and how broad is the garden?
iii. What is its area?

7 Not a whole number [3]

This uses Units 5 and 6 too. Solve $4x + 3 = 6$. Give the answer as a fraction and as a decimal, and check it.

8 Make your own [3]

i. Make up an equation with x on **both** sides whose answer is $x = 6$. Show that 6 works.
ii. Make up a short story that matches $2x + 15 = 75$, and solve it.

9 Is it possible? [4]

Give a reason for each.

i. $x + 5 = 3$ has a whole number as its answer.

ii. $2x = 7$ has an answer.

iii. $x + 2 = x + 3$ has an answer.

iv. $3x + 3 = 3x + 3$ is true for every number x.

10 Think: half a brick [3]

A brick weighs 1 kg more than half a brick. How heavy is the brick?

Hint: draw a level balance, with a whole brick on one pan, and half a brick and a 1 kg weight on the other. A whole brick is two half bricks.