Unit 13 · Equation, Inequality and Graph

HARDER PRACTICE QUESTIONS

Full marks 30

Write your answers on separate paper. Show your working, and check every solution by putting it back into the equation.

1 True, false or open? [4]

Say whether each statement is true, false or open. For a false one, give an example that shows it is false. For an open one, give a value that makes it true and one that makes it false.

i. 7 is a factor of 42.
ii. Every prime number is odd.
iii. $x + 5 > 9$
iv. The sum of two odd numbers is odd.

2 Spot the error [3]

Nabin solved $\frac{x}{4} + 2 = 5$ like this: "$\frac{x}{4} = 7$, so $x = 28$."

i. Show that his answer is wrong by putting it back into the equation.
ii. What did he do wrong?
iii. Solve the equation.

3 The bags on the balance [3]

The left pan of a balance has 3 bags of the same weight and 4 marbles. The right pan has 19 marbles. The pans hang level. Each bag weighs x marbles.

i. Write the equation.
ii. Solve it, saying which equality axiom you use at each step.
iii. One bag is taken off the left pan. How many marbles must come off the right pan to keep it level?

4 Think of a number [3]

Swastika thinks of a number. She multiplies it by 4, then takes away 7, and gets 29.

i. Write an equation for her number.
ii. Solve it.
iii. Her brother does the same with another number and gets 1. What was his number?

5 The change left over [3]

Ayushma has Rs 50. She buys 3 pens, all at the same price, and has Rs 14 left.

i. Write an equation, with p for the price of one pen.
ii. Solve it.
iii. Could she have bought 5 such pens with her Rs 50? Show why.

6 Words into inequalities [4]

Write each rule as an inequality. Then say whether the number line for it has a filled dot or an empty dot, and which way its line goes.

i. A ride at a fair: a child's height h must be at least 120 cm.
ii. A lift: the number of people p in it must be fewer than 8.
iii. List every number of people the lift may carry.
iv. Dolma is 119 cm tall. Can she go on the ride? Which sign says why?

7 Which whole numbers? [3]

Find every whole number that makes each statement true.

i. $2x + 1 < 12$

ii. $x > 2$ and $x \leq 6$, both at once.

iii. $3x = 3x + 1$

8 Make your own [3]

Write an equation whose solution is $x = 4$, in which x is first multiplied by a number and then a number is taken away. Then write a short story that it fits, and solve it.

9 Think: father and son [4]

Sonam's father is 26 years older than Sonam. Their ages add up to 50.

i. With x for Sonam's age, write his father's age.

ii. Write an equation for the sum of their ages, and simplify its left side.

iii. Solve it, and give both ages.

iv. In how many years will their ages add up to 70?