Unit 2 · Whole Number

HARDER PRACTICE QUESTIONS

Full marks 38

Write your answers on separate paper. Show your working, one step a line. Use the divisibility tests where they save you dividing.

1 Where do the brackets go? [5]

Without brackets, $6 + 18 \div 3 \times 2 - 1 = 17$. Put brackets into it, keeping the numbers and signs in the same order, to make each answer.

i. 15
ii. 23
iii. 8
iv. 3 (you need two pairs of brackets)
v. What is the biggest whole number you can make this way?

2 The missing digit [3]

A digit is missing from the number 47□2. Use the divisibility tests to find:

i. every digit that makes it divisible by 3;
ii. the digit that makes it divisible by 11;
iii. the digit that makes it divisible by 7.

3 Spot the error [3]

Sneha tested 343 for 7 like this: "Cut off the 3. $34 - 3 = 31$. 31 is not divisible by 7, so 343 is not divisible by 7."

i. What did she do wrong?
ii. Do the test correctly.
iii. Check your answer by dividing.

4 Four digit cards [3]

Use the digit cards 4, 0, 7 and 5, each once, to make 4-digit numbers. Find:

i. the largest number divisible by 5;
ii. the smallest even number;
iii. the largest odd number.

5 Work backwards [4]

Pranish prime factorized a number by the division method. He divided by 2, then by 2 again, then by 3, then by 7, and was left with 11.

i. What was the number?
ii. What were the answers after each division?
iii. Write the number as a product of primes.

6 Odd numbers make squares [3]

i. Work out $1 + 3$, then $1 + 3 + 5$, then $1 + 3 + 5 + 7$. What kind of numbers are the answers?
ii. Without adding them one by one, find $1 + 3 + 5 + \ldots + 19$.
iii. How many odd numbers, starting from 1, add up to 81?

7 Bamboo strips [3]

Bishal has three bamboo poles, 84 cm, 126 cm and 210 cm long. He wants to cut them all into strips of the same length, as long as possible, with nothing left over. (The lengths are made up for the problem.)

i. How long should each strip be?
ii. How many strips will he get in all?

8 One sweet left over [3]

Diya's grandmother has a jar of sweets, more than 10 and fewer than 100. Shared equally among 4 children, 1 sweet is left over. Shared among 5 children, 1 is left over. Shared among 6 children, 1 is still left over. How many sweets are in the jar?

9 HCF and LCM together [4]

i. The HCF of two numbers is 6 and their LCM is 72. One of the numbers is 18. Find the other.
ii. Sudip says two numbers have HCF 8 and LCM 60. Can he be right? Give a reason.

10 Find the pair [3]

Find two numbers, both between 10 and 50, whose HCF is 7 and whose LCM is 84. Show that your numbers work. Is there another pair between 10 and 50?

11 Think: exactly three factors [4]

6 has four factors, and 7 has two.

i. Find every number less than 50 with exactly three factors.
ii. What do they have in common?
iii. Without testing every number, name the next two numbers after 50 with exactly three factors.