

DOT & LINE

Sample Lessons

5.1

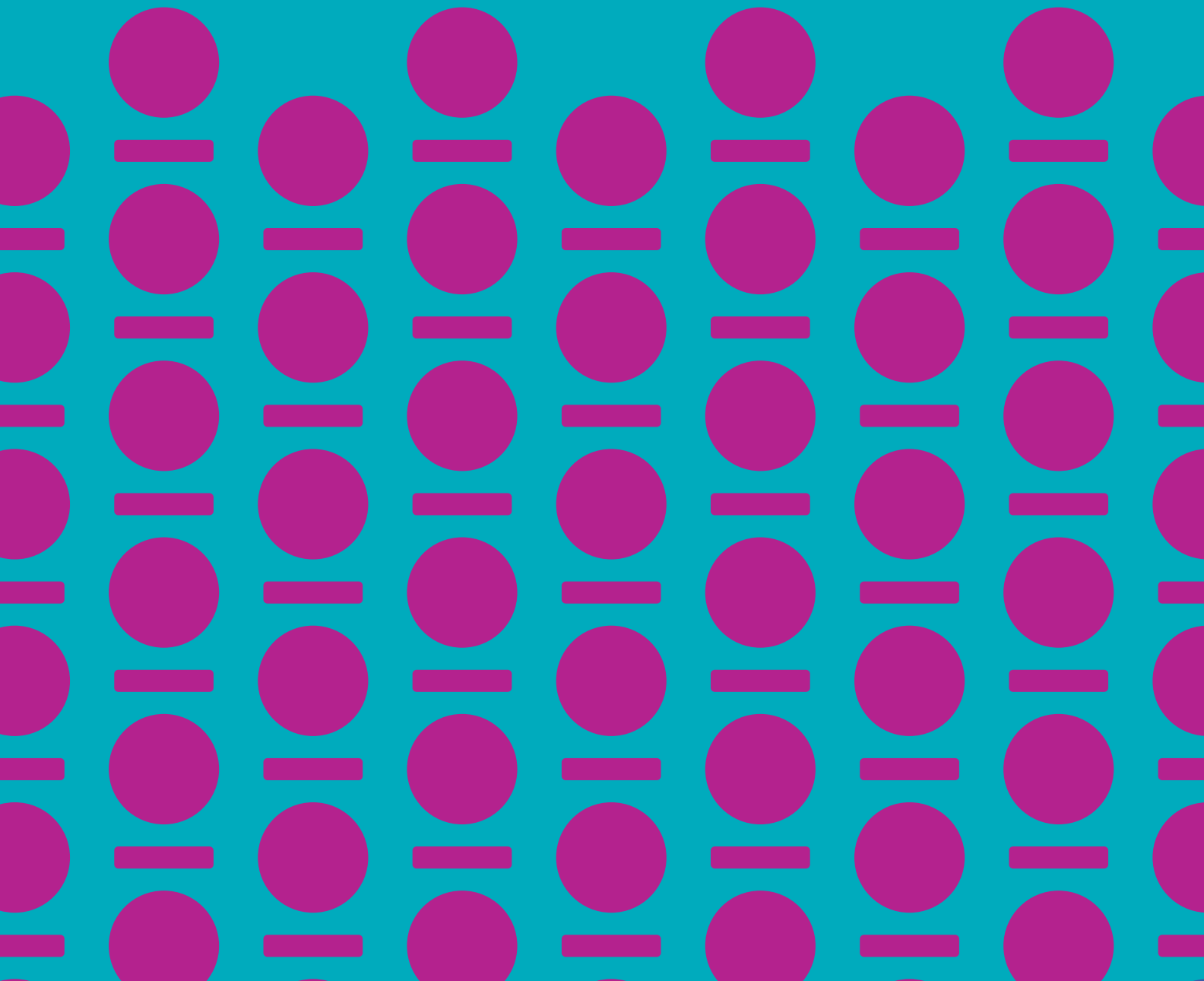


TABLE OF CONTENTS

BASIC OPERATIONS

Lesson-1: Place Value	2
Lesson-2: Inequality: Relationship between Numbers - Advanced	7
Lesson-3: Subtraction	10
Lesson-4: Adding & Subtracting	14
Lesson-5: Concepts in Basic Operations	15
Lesson-6: Factors, Prime Numbers and Composite Numbers	18
Lesson-7: Prime Factorization	21
Lesson-8: Highest Common Factors & Lowest Common Multiples	25
Lesson-9: Mental Math	28
Lesson-10: Multiplying by Ten, Hundred and Thousand	29
Lesson-11: Mental Math	30
Lesson-12: Multiplying 2 Digit Numbers by Multiples of Ten	32
Lesson-13: Double Digit Multiplication	33
Lesson-14: Rearranging Products	36
Lesson-15: Remainders	39
Lesson-16: Long Division Method - 3 and 4 Digit by 1 Digit	42
Lesson-17: Concepts of Multiplication and Division	47
Lesson-18: Integers	48
Lesson-19: Order of Operations	50

MEASUREMENT

Lesson-1: Measuring Mass in Milligrams, Grams and Kilograms	54
Lesson-2: Volume	57
Lesson-3: Volume of a Rectangular Prism	59
Lesson-4: Elapsed Time	62
Lesson-5: Subtracting Time	65
Lesson-6: 24-hour Clock Notations	67
Lesson-7: Adding Time	71
Lesson-8: Topics in Time	74

GEOMETRY

Lesson-1: Types of Triangles	77
Lesson-2: Parallel Lines	80
Lesson-3: Perpendicular Lines	83
Lesson-4: Properties of Shapes	86
Lesson-5: Types of Quadrilaterals	89
Lesson-6: Kites	92
Lesson-7: Symmetry	93
Lesson-8: Comparing Shapes	95
Lesson-9: Sorting and Classifying Shapes	97
Lesson-10: Puzzles and Problems	99

SEQUENCES ALGEBRA

Lesson-1: Patterns and T-tables	104
Lesson-2: T-tables	107
Lesson-3: Terms and Term Numbers	109
Lesson-4: Number Pyramids	111
Lesson-5: Rules and T-tables - Part I	112
Lesson-6: Direct Variation	115
Lesson-7: Finding the Difference in Terms in a Pattern	117
Lesson-8: Rules and T-tables - Part II	118
Lesson-9: Finding and Using Rules to Extend Patterns	120

STATISTICS

Lesson-1: Bar Graphs	122
Lesson-2: Double Bar Graphs	126
Lesson-3: Introducing Mean	129
Lesson-4: Calculating Mean	131
Lesson-5: Mean, Median, Mode and Range	134
Tear-able Activities	138



Lesson-6

Factors, Prime Numbers and Composite Numbers

Note: Let us learn about different types of numbers.



Factors are the numbers multiplied to get another number. For example, 2 and 4 are factors of 8.



Prime numbers are the numbers that have **only two factors**, the number 1 and itself. For example, the number 3 is prime number as it has only two factors → 1 and 3.



Composite numbers are those numbers which have **more than two factors**.

For example, the number 6 has more than two factors → 1, 2, 3 and 6.

Since 6 has more than two factors, it is a composite number.

1. For each number given below, write its factors and identify whether the number is prime or composite.

a)

12

☐

Prime

☐

Composite

b)

5

☐

Prime

☐

Composite

c)

15

☐

Prime

☐

Composite

d)

18

☐

Prime

☐

Composite

e)

21

☐

Prime

☐

Composite

f)

10

☐

Prime

☐

Composite

g)


2

☐

Prime

☐

Composite

 **6. Teacher Note:** Students will learn to list factors of different numbers and they will also be able to identify and differentiate between prime and composite numbers.



Lesson-6

Factors, Prime Numbers and Composite Numbers

2. State whether each statement is true or false:

True

False

a) 1 is a composite number.

☐☐

b) 26 is a prime number.

☐☐

c) 15 is a composite number.

☐☐

d) 33 is a prime number.

☐☐

e) 92 is both an even and a composite number.

☐☐

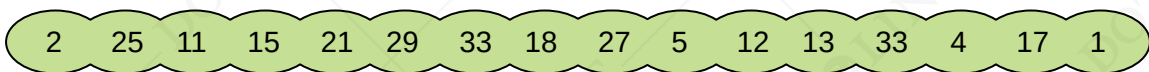
f) Factors of 20 are 2, 10 and 5 only.

☐☐

g) All odd numbers are prime numbers.

☐☐

3. From the numbers given below, list the following:



a) Factors of 5: _____

b) Prime numbers : _____

c) Composite numbers: _____

4. Using all the numbers from 0 till 25, list the following:

a) Prime numbers → _____

b) Composite numbers → _____

c) Numbers which have two factors → _____

d) Numbers which have three factors → _____

e) Numbers which have six factors → _____



Lesson-6

Factors, Prime Numbers and Composite Numbers

5. List the following:

a) The first five composite numbers



b) The first six prime numbers



c) The first three odd numbers



6. Write four numbers less than 50 that have 10 and 2 as factors:

7. I am a number less than 10. I am not divisible by 2 and I am not a prime number. What am I? _____

8. I am a product of the first two composite numbers. What am I?

9. List the factors of the numbers given below:

a) 55: _____

b) 16: _____

c) 9: _____

d) 48: _____

10. A prime number can be divided by itself and by another number. What is that number?

11. Write the number which is both even and prime.

12. The difference between the ages of Naveen and Aliza is a prime number. Naveen is 28 years old. Choose the possible age of Aliza from the following values.

19 20 21



Mind Benders

Find the two prime numbers that can be added to get:

a) $12 = \underline{\quad} + \underline{\quad}$

b) $36 = \underline{\quad} + \underline{\quad}$



Lesson-7

Prime Factorization



5.1-BO-Quiz24



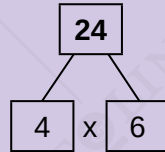
Note: A **factor tree** is a useful way to factorize numbers to their prime factors.



Any composite number can be written as a product of prime numbers. Study the steps to find the prime factor of 24 by **prime factorization**.

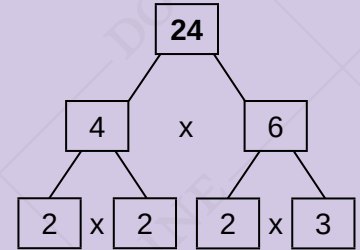
Step 1:

Find two numbers, whose product is 24 when multiplied. Here, 4 and 6 are factors of 24.



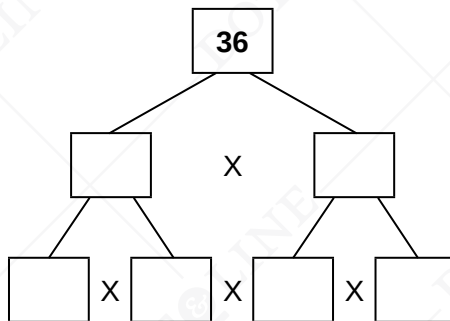
Step 2:

Here 4 and 6 are not prime numbers. So we will repeat step 1 for them. 4 is factorized into 2 and 2 and 6 is factorized into 2 and 3. We cannot factorize 2 and 3 any further because they are prime numbers.

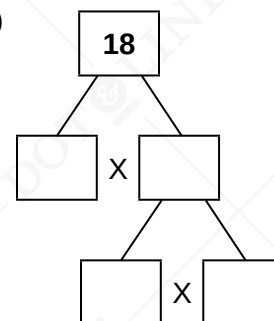


1. Fill in the factor tree for the following numbers.

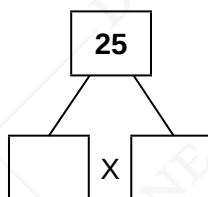
a)



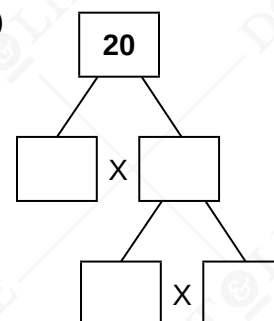
b)



c)



d)




7. Teacher Note: Students will learn how to factorize numbers (with and without drawing a factor tree) to their prime factors.




Lesson-7


Prime Factorization


2. Without drawing a factor tree, write the prime factors for each of the following numbers. The first one has been done for you.


a)  =

b)  =

c)  =

d)  =

e)  =

f)  =

3. Draw a factor tree to factorize the following numbers to their prime factors.

a) 33

b) 42

c) 56

d) 72

e) 18

f) 68

4. Aliya began to factorize 60 as 10×6 , while Sherbano began with 2×30 . Draw Aliya and Sherbano's factor trees to see if their answers were the same or different.

Aliya's factor tree.

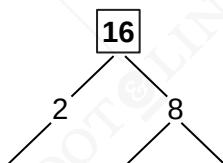
Sherbano's factor tree.



Lesson-7

Prime Factorization

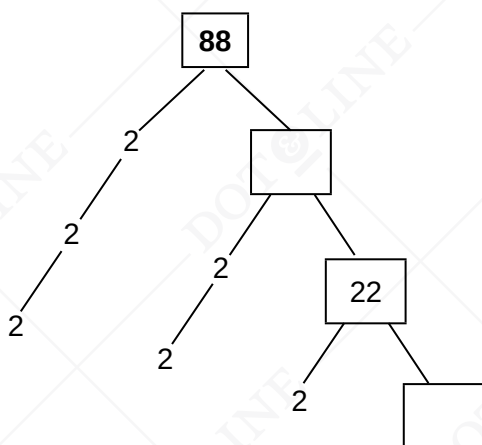
5. What is the prime factorization of 16? Complete the factor tree below.



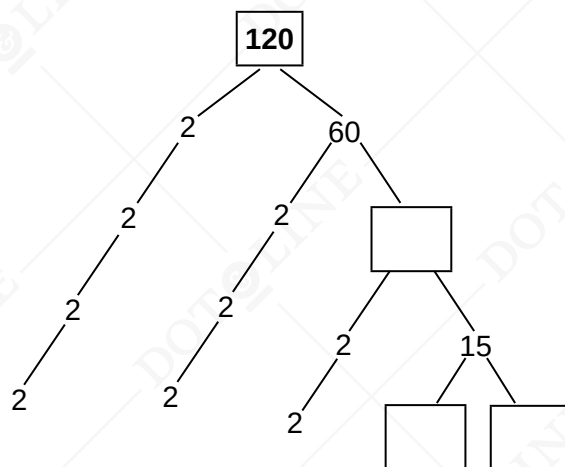
6. Express 36 as a product of its prime factors.

7. Complete the following factor trees:

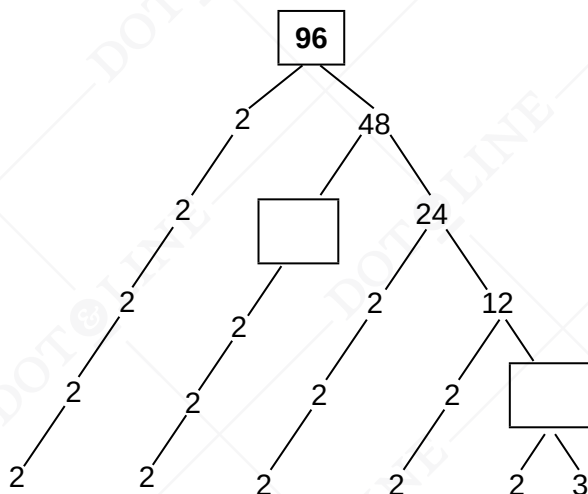
a)



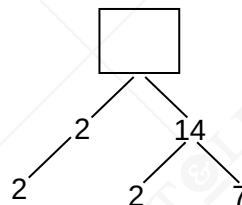
b)



c)



8. The following factor tree has lost its first number. Can you identify the number? Fill in the blank box.





Lesson-7

Prime Factorization

Note: Other than factor trees, we can use tabular methods to find the prime factors of a number. Let us find the prime factors of 24 using the tabular method.

Step 1:

Divide 24 by the smallest possible prime factor.

2	24
	12

Step 2:

Now repeat step 1 for the new obtained number, i.e. 12

2	24
2	12
	6

Step 3:

Keep dividing by the smallest prime number till the last row has 1.

2	24
2	12
2	6
3	3
	1

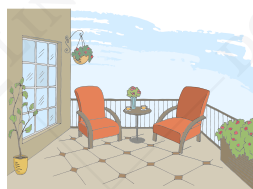
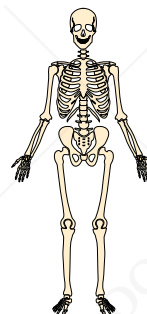
Step 4:

Following are the prime factors of 24.

$$2 \times 2 \times 2 \times 3 = 24$$

- Express 60 as a product of its prime factors. Use the tabular method.
- Carry out prime factorization of 99 using the tabular method.
- Use the tabular method to find the prime factors of the numbers given in question 3 of this lesson. Check whether you get the same factors or not.

- There are 230 joints in the human body. Find the prime factorization of 230.



- Rehman's balcony measures 40 metres \times 50 metres. Find the area of his balcony and show how the area could be written using exponents.



Mind Benders

The sum of the factors of 28, excluding itself, is also 28.

$$1 + 2 + 4 + 7 + 14 = 28$$

Find another such number that is between 1 and 10.