BitWith Bite

MATHEMATICS WORKSHEET

Graph Theory

Chapter: Discrete Mathematics · Level ★★★ · Time: 30 min

SCORE ___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

✓ Find the degree of a vertex. ✓ Apply the handshake theorem (degree sum = 2 × edges).

✓ Recognise paths and cycles. ✓ Relate degree sum to the number of edges.

Section A · Concept Check • BEGINNER 4 × 1 = 4

1 Edges A-B, B-C, C-D, D-A, A-C. The degree of vertex A is:

◯ A. 3 ◯ B. 2 ◯ C. 4 ◯ D. 1

2 Using the same graph, the degree of vertex C is:

◯ A. 3 ◯ B. 2 ◯ C. 4 ◯ D. 1

3 A graph has 6 edges. The sum of all vertex degrees is:

◯ A. 12 ◯ B. 6 ◯ C. 36 ◯ D. 3

4 If the sum of vertex degrees is 14, the number of edges is:

◯ A. 7 ◯ B. 14 ◯ C. 28 ◯ D. 3.5

Section B · Problem Solving • INTERMEDIATE 2 + 3×3 = 11

5 The _____ of a vertex is its number of incident edges.

6 The sum of all degrees equals _____ × the number of edges.

7 Edges A-B, B-C, C-D, D-A, A-C. Find the degree of vertex A.

8 Using the same graph, find the degree of vertex C.

9 A graph has 6 edges. Find the sum of all vertex degrees.

Section C · Challenge • CHALLENGE 5

10 If the sum of vertex degrees is 14, how many edges does the graph have?

Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 Total ___/20

Teacher's Signature

Parent's Signature

✂ ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-A 3-A 4-A | 5 degree 6 2 7 = 3 (B, D, C) 8 = 3 (B, D, A) 9 = 12 | 10 = 7