**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**ANSWER KEY**

**Worksheet 1**

**Complete the following problems using Polya’s Problem Solving Strategies. Show your work.**

1. Mark and Jim began reading a novel on the same day. Mark reads 8 pages a day and Jim reads 4 pages a day. If Mark is on page 64, on what page is Jim? Page 32

Day 1 Mark (8), Day 2 Mark (16), Day 3 Mark (24), Day 4 Mark (32),

Day 5 Mark (40), Day 6 Mark (48), Day 7 Mark (56), Day 8 Mark (64)

Day 1 Jim (4), Day 2 Jim (8), Day 3 Jim (12), Day 4 Jim (16), Day 5 Jim (20), Day 6 Jim (24), Day 7 Mark (28), Day 8 Mark (32)

2. The 14 digits of a debit card are written in the boxes below. If the sum of

any three consecutive digits is 18, what is the value of X? 6

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X=6 | 4 | 8 | 6 | 4 | 8 | 6 | 4 | 8 | 6 | 4 | 8 | 6 | 4 |

3. List Polya’s four steps for problem solving.

Understand the Problem

Make a Plan

Carry Out the Plan

Look Back

4. How many squares, of any possible size, are on a 5 × 5 chess board?

(Hint: Check your class notes)

02 + 12 + 22 + 32 + 42 + 52 = 0 + 1 + 4 + 9 + 16 + 25 = 55

5. Use a traditional clock face to determine the next three terms in the

following sequence. 3, 8, 1, 6, 11, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ 4, 9, 2

6. Identify the pattern as geometric or arithmetic and find the next

three terms.

geometric

(a) 3, 9, 27, 81 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

243

729

2187

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

arithmetic

(b) 7, 12, 17 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22

27

32

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

7. **Challenge**: Sometimes an arithmetic sequence may have a pattern that is more difficult to find.

104

Take a look at these numbers: 2, 4, 12, 26, 46, 72, \_\_\_\_\_\_\_\_\_

2 4 12 26 46 72 72 + 32 = 104

2 8 14 20 26 32

Common difference 6 6 6 6 6

1. What is the next number?
2. What pattern did you find?

8. There are 7 people in a room and each person shakes hands exactly once with everyone else. How many handshakes take place? 21

1 person=0 4 people = 3 + 3 = 6 7 people = 15 + 6 = 21

2 people =1 5 people = 6 + 4 = 10

3 people = 1+ 2 = 3 6 people = 10 + 5 = 15

9. Pascal’s Triangle begins with Row 0, which is the number “1”.

Write Row 5 of Pascal’s triangle here.

1 5 10 10 5 1

10. What is the 15th term of the following sequence 7, 14, 21, 28? 105

N = 15 20th term = 7+ (15 - 1)7

a = first term = 7 7+14(7)

d = difference = 7 105