

# Unit 11: Patterns and Algebra

Name: \_\_\_\_\_

## Quiz (Lessons 13–14) — AB

Date: \_\_\_\_\_

1. a) Fill in the T-table for the number of squares in each figure of the geometric pattern. Extend the number pattern.



Figure 1



Figure 2

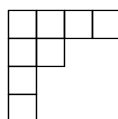


Figure 3

| Figure Number | Number of Squares |
|---------------|-------------------|
| 1             |                   |
| 2             |                   |
| 3             |                   |
| 4             |                   |
| 5             |                   |



- b) Write the rule for the number pattern.

Start at \_\_\_\_\_ and \_\_\_\_\_

2. Which number do you add or subtract each time? Write the rule for the number pattern.

a) 15 , 12 , 9 , 6 , 3

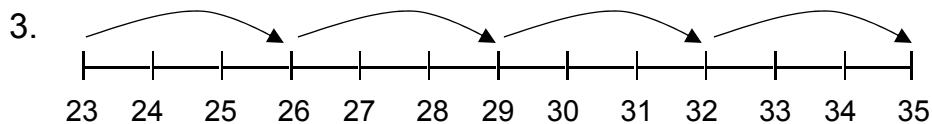
Start at \_\_\_\_\_

\_\_\_\_\_

b) 1 , 5 , 9 , 13 , 17

Start at \_\_\_\_\_

\_\_\_\_\_



- a) Write the number pattern the picture shows.

\_\_\_\_\_

- b) Write a rule for the number pattern.

Start at \_\_\_\_\_

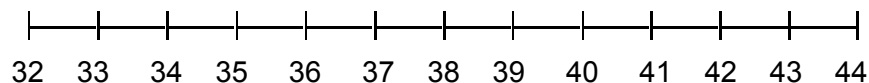
## Unit 11: Patterns and Algebra

continued

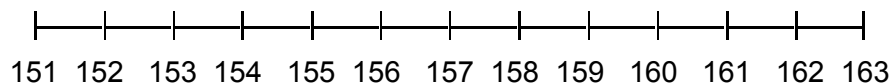
### Quiz (Lessons 13–14) — AB

4. Write the first 4 numbers in the number pattern. Show the pattern on the number line.

Start at 32. Add 4 each time. \_\_\_\_\_



5. Draw a decreasing pattern on the number line.



a) Write the numbers in your pattern. \_\_\_\_\_

b) Write a rule for your number pattern.

Start at \_\_\_\_\_

**BONUS ►** Write the rule for the number pattern.

925, 910, 895, 880, 865

\_\_\_\_\_

# Unit 11: Patterns and Algebra

## Quiz (Lessons 13–14) — AB

1. a) gap: +2

|    |
|----|
| 4  |
| 6  |
| 8  |
| 10 |
| 12 |

- b) 4, add 2 each time

2. a) gap: -3

15 and subtract 3  
each time

- b) gap: +4

1 and add 4 each  
time

3. a) 23, 26, 29, 32, 35

- b) 23 and add 3 each  
time

4. 32, 36, 40, 44

Teacher to check number  
line.

5. Answers will vary. Teacher  
to check.

### BONUS

Start at 925 and subtract  
15 each time.

# Unit 11: Patterns and Algebra

## Quiz (Lessons 15–19) — AB

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. a) Write four multiples of 7.

$1 \times 7 = \underline{\hspace{2cm}}$

$2 \times 7 = \underline{\hspace{2cm}}$

$3 \times 7 = \underline{\hspace{2cm}}$

$4 \times 7 = \underline{\hspace{2cm}}$

**February**

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|-----|-----|-----|-----|-----|-----|-----|
| 1   | 2   | 3   | 4   | 5   | 6   | 7   |
| 8   | 9   | 10  | 11  | 12  | 13  | 14  |
| 15  | 16  | 17  | 18  | 19  | 20  | 21  |
| 22  | 23  | 24  | 25  | 26  | 27  | 28  |

- b) On what day of the week do the multiples of 7 occur on the calendar?

\_\_\_\_\_

2. Write “T” if the equation is true. Write “F” if the equation is false.

a)  $5 \times 8 = 40$  \_\_\_\_\_

b)  $9 + 6 = 13$  \_\_\_\_\_

c)  $42 \div 6 = 8$  \_\_\_\_\_

d)  $13 - 4 = 9$  \_\_\_\_\_

e)  $7 \times 7 = 48$  \_\_\_\_\_

f)  $6 + 7 = 13$  \_\_\_\_\_

3. Solve the equation by guessing and checking.

a)  $8 + \square = 13$

b)  $\square + 6 = 15$

c)  $4 + \square = 12$

4. Write the fact family for the picture.



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Write the subtraction equation to find the missing number.

a)  $12 = 7 + \square$

b)  $6 + \square = 14$

c)  $4 + \square = 11$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Unit 11: Patterns and Algebra

continued

### Quiz (Lessons 15–19) — AB

6. Solve the equation by guessing and checking.

a)  $\square - 5 = 8$

b)  $\square - 7 = 9$

c)  $\square - 3 = 9$

7. Write an addition equation to find the missing number.

a)  $\square - 5 = 7$

b)  $\square - 8 = 9$

c)  $\square - 6 = 13$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. Write the other subtraction equation from the same fact family.  
Find the number in the box.

a)  $14 - \square = 9$

b)  $13 - \square = 6$

c)  $11 - \square = 4$

\_\_\_\_\_ =  $\square$

\_\_\_\_\_ =  $\square$

\_\_\_\_\_ =  $\square$

9. Solve the equation.

a)  $7 - x = 4$

b)  $15 = 9 + y$

c)  $8 = x - 9$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

$x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

$x =$  \_\_\_\_\_

**BONUS** ► Solve the equation.

$$500 - x = 200$$

\_\_\_\_\_

$x =$  \_\_\_\_\_

# Unit 11: Patterns and Algebra

Answer Key

## Quiz (Lessons 15–19) — AB

1. a) 7  
14  
21  
28  
b) Saturday
2. a) T  
b) F  
c) F  
d) T  
e) F  
f) T
3. a) 5  
b) 9  
c) 8
4.  $2 + 4 = 6$ ,  $4 + 2 = 6$ ,  
 $6 - 2 = 4$ ,  $6 - 4 = 2$
5. a)  $12 - 7 = 5$   
b)  $14 - 6 = 8$   
c)  $11 - 4 = 7$
6. a) 13  
b) 16  
c) 12
7. a)  $7 + 5 = 12$   
b)  $9 + 8 = 17$   
c)  $13 + 6 = 19$
8. a)  $14 - 9 = 5$   
b)  $13 - 6 = 7$   
c)  $11 - 4 = 7$
9. a)  $7 - 4 = 3$   
 $x = 3$   
b)  $15 - 9 = 6$   
 $y = 6$   
c)  $8 + 9 = 17$   
 $x = 17$

### BONUS

$$500 - 200 = 300$$
$$x = 300$$

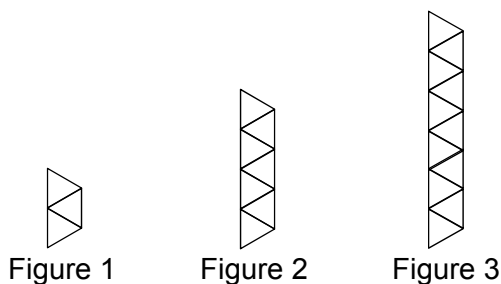
# Unit 11: Patterns and Algebra

## Test (Lessons 13–19) — AB

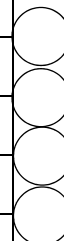
Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. a) Fill in the T-table for the number of triangles in each figure of the geometric pattern. Extend the number pattern.

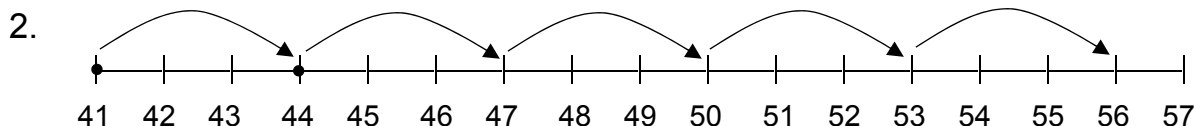


| Figure Number | Number of Triangles |
|---------------|---------------------|
| 1             |                     |
| 2             |                     |
| 3             |                     |
| 4             |                     |
| 5             |                     |



- b) Write the rule for the number pattern.

Start at \_\_\_\_\_ and \_\_\_\_\_



- a) Write the number pattern the picture shows.

\_\_\_\_\_

- b) Write a rule for the number pattern.

Start at \_\_\_\_\_ and \_\_\_\_\_

3. Which number do you add or subtract each time? Write the rule for the number pattern.

a) 15, 25, 35, 45, 55

Start at \_\_\_\_\_

\_\_\_\_\_

b) 65, 56, 47, 38, 29

Start at \_\_\_\_\_

\_\_\_\_\_

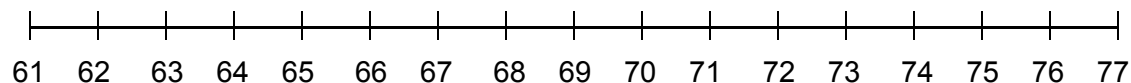
# Unit 11: Patterns and Algebra

continued

## Test (Lessons 13–19) — AB

4. Write the first 4 numbers in the number pattern. Show the pattern on the number line.

Start at 75. Subtract 3 each time. \_\_\_\_\_



5. a) Describe the number pattern in the shaded row.

Start at \_\_\_\_\_, add \_\_\_\_\_ each time.

- b) The shaded numbers are all multiples of \_\_\_\_\_.

|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |

6. Write “T” if the equation is true. Write “F” if the equation is false.

a)  $9 \times 2 = 11$  \_\_\_\_\_      b)  $7 + 4 = 11$  \_\_\_\_\_      c)  $6 + 6 = 36$  \_\_\_\_\_

7. Write the subtraction equation to find the missing number.

a)  $14 = 9 + \square$       b)  $3 + \square = 11$       c)  $17 = 8 + \square$

\_\_\_\_\_

8. Write the addition equation to find the missing number.

a)  $\square - 7 = 5$       b)  $\square - 8 = 6$       c)  $\square - 4 = 7$

\_\_\_\_\_



## Unit 11: Patterns and Algebra

continued

### Test (Lessons 13–19) — AB

9. Write the other subtraction equation from the same fact family.  
Find the number in the box.

a)  $12 - \square = 3$

\_\_\_\_\_

b)  $16 - \square = 9$

\_\_\_\_\_

c)  $13 - \square = 6$

\_\_\_\_\_

10. Solve the equation.

a)  $12 - x = 4$

\_\_\_\_\_

$x = \underline{\hspace{2cm}}$

b)  $14 = 8 + y$

\_\_\_\_\_

$y = \underline{\hspace{2cm}}$

c)  $7 = y - 3$

\_\_\_\_\_

$y = \underline{\hspace{2cm}}$

11. Tania wants to solve the equation  $7 + \underline{\hspace{1cm}} = 12$ . Explain how knowing the fact family can help her solve the equation.

**BONUS►** Solve the equation.

a)  $34 + 23 + x = 67$

b)  $48 = 57 - x$

# Unit 11: Patterns and Algebra

Answer Key

## Test (Lessons 13–19) — AB

1. a) gap: +4
- |    |
|----|
| 3  |
| 7  |
| 11 |
| 15 |
| 19 |
- b) 3, add 4 each time
2. a) 41, 44, 47, 50, 53, 56
- b) 41, add 3 each time
3. a) gap: +10  
15 and add 10 each time
- b) gap: -9  
65 and subtract 9 each time
4. 75, 72, 69, 66  
Teacher to check number line.
5. a) 40, 10
- b) 10
6. a) F
- b) T
- c) F
7. a)  $14 - 9 = 5$
- b)  $11 - 3 = 8$
- c)  $17 - 8 = 9$
8. a)  $7 + 5 = 12$
- b)  $8 + 6 = 14$
- c)  $7 + 4 = 11$
9. a)  $12 - 3 = 9$
- b)  $16 - 9 = 7$
- c)  $13 - 6 = 7$
10. a)  $12 - 4 = 8$   
 $x = 8$
- b)  $14 - 8 = 6$   
 $y = 6$
- c)  $7 + 3 = 10$   
 $y = 10$
11. Sample answer:  
If Tania knows the fact family, she knows that  $12 - 7 = 5$ .

### BONUS

- a)  $57 + x = 67$   
 $67 - 57 = 10$   
 $x = 10$

- b)  $48 = 57 - x$   
 $57 - 48 = 9$   
 $x = 9$