Sequences and Patterns: Chapter Test 1

1. If $y = 2x - 4$, what is the value of y when $x = 2$

   a. -2 b. 4 c. 2 d. 0

2. If $y = 3x - 1$ what is the value of x when $y = -7$

   a. -22 b. 2 c. -2 d. $-\dfrac{8}{3}$

3. Which rule could be used to generate the following number pattern: $-5, -9, -13, -17$

   a. $t_n = 4n + 1$ b. $t_n = -4n - 1$ c. $t_n = -4n + 1$ d. $t_n = -n - 4$

4. a. Give the next three numbers in the number patterns below:

   i. $1, 3, 5, 7, 9,$ _____ , _____ , _____

   ii. $-1, -6, -11, -16,$ _____ , _____ , _____

   iii. $0, 2, 6, 12, 20, 30,$ _____ , _____ , _____

   b. Using the following rules, give the first three terms in their number patterns:

   i. $-2n;$ _____ , _____ , _____

   ii. $2n + 3;$ _____ , _____ , _____

   iii. $6 - n;$ _____ , _____ , _____

5. Amy works at a dog grooming salon. She is paid according to the rule:

   $y = 12.50n$, where n is the number of dogs that she grooms.

   Interpret and explain the meaning of this rule in the context of the question.

6. Determine the rule used to produce the following number patterns:

   a. $5, 10, 15, 20, 25, \ldots$

   b. $2, 3, 4, 5, 6, \ldots$

   c. $-1, -5, -9, -13, -17, \ldots$

Math-Help-Services.com
This resource can be used for FREE by any teacher / student with an active *Math Help Services* account

Chapter Test 1   283

9. Colin works in a warehouse and is responsible for loading large crates onto the back of their delivery trucks. He is paid $160 per week and earns a bonus of $40 for every crate that is successfully loaded onto the truck. Create a table to determine how many crates he needs to load in order to earn over $500 for the week.

Number of crates	Wage

10. Janine is training to compete in the annual stair climbing competition, which requires runners to race up the CN Tower in Toronto. Each day, Janine spends her lunch hour running up the stairs of her office building. She has noticed that each floor has 40 stairs between them. Initially she could only make it up 15 floors, but each day she has been able to climb an additional two flights of stairs. If she continues increasing her training in this manner, how long will it be before she is ready to tackle the 1800 stairs of the CN Tower?

Sequences and Patterns: Chapter Test 2

1. If $y = -2x + 1$ what is the value of y when $x = 1$

   a. -1 b. 0 c. 1 d. 3

2. If $y = -15x$ what is the value of x when $y = 5$

   a. 3 b. -45 c. -3 d. $-\dfrac{1}{3}$

3. Determine which rule could be used to generate the following number pattern: 495, 490, 485, 480, …

   a. $t_n = -5n$ b. $t_n = -5n + 500$ c. $t_n = 5n$ d. $t_n = 5n - 500$

4. **a.** Give the next three numbers in the number patterns below:

   i. 11, 14, 17, 20   _____ , _____ , _____

   ii. 32, 16, 8, 4,   _____ , _____ , _____

   iii. 18, 13, 8, 3,   _____ , _____ , _____

   b. Using the following rules, give the first three terms in their number patterns:

   i. 6n;   _____ , _____ , _____

   ii. 3n – 2;   _____ , _____ , _____

   iii. –2n + 1;   _____ , _____ , _____

5. Jonathan is a personal trainer at a gym. He is paid according to the rule:

   Wage = 25n + 100, where n is the number of clients that he trains.

   Interpret and explain the meaning of this rule in the context of the question.

6. Determine the rule used to produce the following number patterns:

   a. 2, 9, 16, 23, 30, …

   b. 4, 7, 10, 13, 16, …

   c. –3, –5, –7, –9, –11, …

Math-Help-Services.com
This resource can be used for FREE by any teacher / student with an active *Math Help Services* account

Chapter Test 2   287

9. George has started a new job selling cars. His company pays him a weekly salary of $150 plus an additional $225 commission for every vehicle sold. Given that George does not expect to sell more than 6 cars in a week, produce a table that he could use to determine his week's wage based on the number of cars sold.

Number of cars sold	Wage

10. Jenny is saving up for her first car. Currently, she has $1200 in a savings account and she is able to deposit $275 each month from her pay. She has 13 months before she goes for her driving test. Write a rule and use it to calculate how much money she will have in her savings account in 13 months.

Extension

11. Steven has been teaching himself to juggle with 3 tennis balls. Initially, he could only juggle for 20 seconds without dropping a ball, however each day he has been able to increase his time by exactly 8 seconds. His goal is to be able to juggle for 5 minutes without stopping. How many days will it take for him to reach his goal?