

Solutions

4. Determine the next three numbers in each pattern.

- a) $-1, -3, -5, -7$
- b) $-3, -6, -12, -24$
- c) $12, 7, 2, -3$
- d) $5, -10, 20, -40$

- a) $-9, -11, -13$
- b) $-48, -96, -192$
- c) $-8, -13, -18$
- d) $80, -160, 320$

5. Describe how to find the next number in each pattern.

- a) $-4, -7, -10, -13$
- b) $-15, -11, -7, -3$
- c) $-81, -27, -9, -3$
- d) $7, -49, 343, -2401$

- a) Subtract 3
- b) Add 4
- c) Divide by 3
- d) Multiply by -7

6. a) Find the next four numbers in the pattern $-3, -6, -9, -12, \dots$
 b) Which integers, other than 1 and -1 , are factors of all the numbers in the pattern?

a) $-15, -18, -21, -24$
 b) 3 and -3

7. a) Find the next four numbers in the pattern $-5, -10, -15, -20, \dots$
 b) Which integers, other than 1 and -1 , are factors of all the numbers in the pattern?

a) $-25, -30, -35, -40$
 b) 5 and -5

8. The first four numbers in a pattern are $3, -6, 12, -24$.
 a) Describe the pattern in two ways.
 b) Determine the next three numbers in the pattern.

a) multiply by -2
 divide by $-\frac{1}{2}$
 b) $48, -96, 192$

10. What are the first four negative integers that are divisible by 2? Explain how you know.

$-2, -4, -6, -8$
 They are the first 4 negative multiples of 2.

11. What are the first three negative integers that are divisible by -7 ? How do you know?

$-7, -14, -21$
 They are the first 3 negative multiples of -7

12. Justin started up a business making jewellery for his friends and family. He borrowed \$200 from his aunt and used it to buy supplies. Justin charges \$5 for each piece of jewellery he makes.

- Calculate Justin's profit or loss after selling 10 pieces of jewellery.
- Describe the pattern.
- Justin makes and sells 30 pieces of jewellery. Will he make a profit?

a) Revenue = $10 \times \$5$
 $= \$50$

Profit = Revenue - Costs
 $= 50 - 200$
 $= -\$150$

\Rightarrow loss of \$150

b) Increasing by 5

c) Rev = $30 \times \$5$
 $= \$150$

Profit = Rev - Costs
 $= 150 - 200$
 $= -\$50$

\Rightarrow No, he makes a loss of \$50.

13. The change in a stock price, in dollars, over 5 days is shown.

Day	Change in Stock Price
1	-3
2	-1
3	1
4	3
5	5

6	7
7	9

a) Determine the change in stock price on the sixth and seventh days if the pattern continues.

b) Describe the pattern.

c) Determine the change in stock price on the 10th day if the pattern continues.

d) Is the pattern realistic? Explain why or why not.

Change is
 b) Increasing by 2

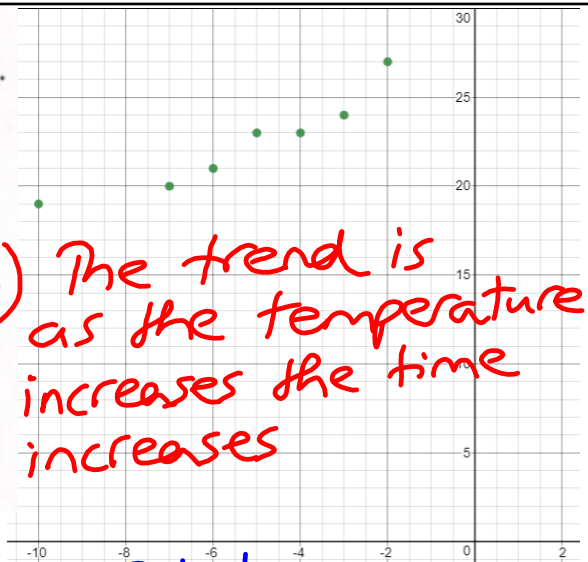
c) $8 \rightarrow 11, 9 \rightarrow 13,$
 $10 \rightarrow 15$

\Rightarrow change is 15 on day 10.

d) Stock price start to decrease at some point.

14. The table shows the temperature and the winning times for cross country ski racing.

Temperature (°C)	Time (min)
-2	27
-6	21
-4	23
-5	23
-10	19
-3	24
-7	20



b) The trend is as the temperature increases the time increases

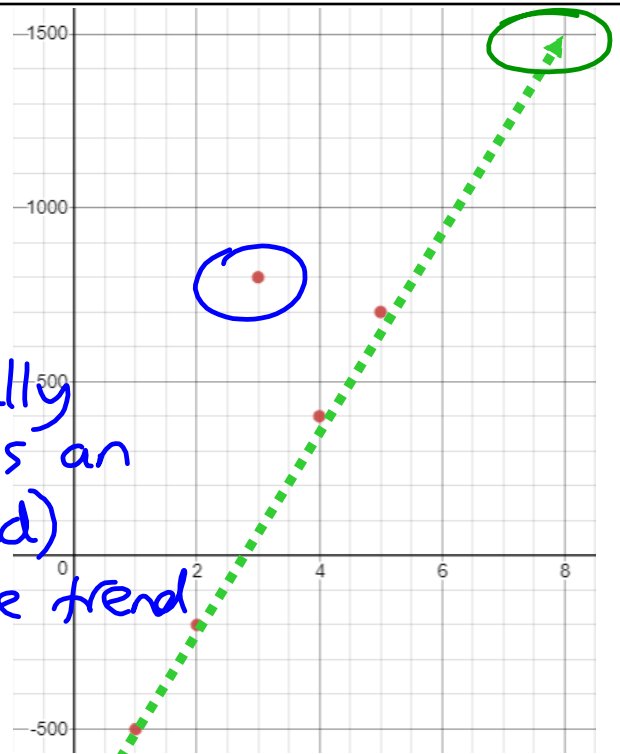
- a) Graph the data on a coordinate grid. Place temperature on the horizontal axis and time on the vertical axis.
- b) Describe the trend in the data.
- c) What is the mean time?
- d) At what temperature would you prefer to ski? Why?

$$c) = \frac{\text{Total}}{\# \text{ of } \#s} = \frac{157}{7} = 22.4^{\circ}C$$

d) $-5^{\circ}C$ for me. Not too cold and won't take too long!

15. The predicted income for a small jewellery business is shown.

Month	Predicted Income (\$)
1	-500
2	-200
3	800
4	400
5	700



b) Trend is generally increasing. There is an OUTLIER (circled) that doesn't fit the trend

c) Predicting income of \$1500



16. A clothing store sells new coats at a regular price of \$150. As a clearance sale, each coat is offered at \$15 off for every week it is on sale, until it has been sold.

- Describe the pattern in the sale price.
- What is the sale price after 6 weeks of the sale?
- When will this pattern stop working? Explain.

a) Decreasing by \$15

$$b) 150 - 6(15)$$

$$= 150 - 90$$

$$= \$60$$

c) After 10 weeks.

$$150 - 10(15)$$

$$= 150 - 150$$

$$= \$0!$$