

6.60 - Questions Handout #s 4 - 16

Check Your Understanding

Practise

For help with questions 4 to 9, refer to Example 1.

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) $5, -10, 20, -40$
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) $7, -49, 343, -2401$
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?
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?
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.
9. Make up your own pattern like the one in question 8. Give it to a classmate to describe and extend.

Apply

10. What are the first four negative integers that are divisible by 2? Explain how you know.
11. What are the first three negative integers that are divisible by -7 ? How do you know?

For help with questions 12 and 13, refer to Example 2.

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

- 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.

For help with questions 14 and 15, refer to Example 3.

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

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

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

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

- Graph these data.
- Describe the trend.
- Predict the income after 8 months.



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.

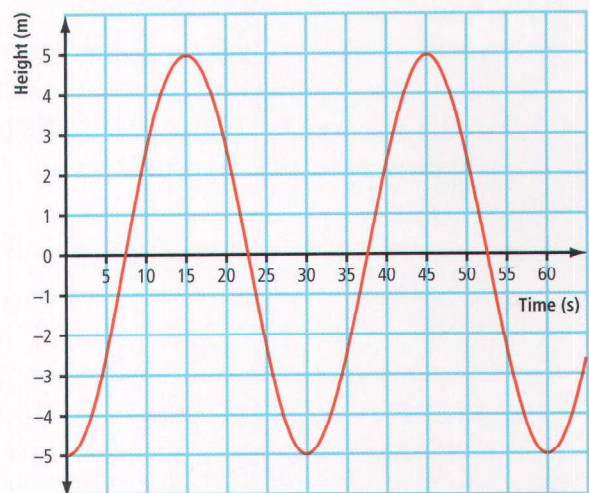
- Describe the pattern in the sale price.
- What is the sale price after 6 weeks of the sale?
- When will this pattern stop working? Explain.

Extend

17. If you start at -600 and count up by 7 s, which of the following numbers will be included? Justify your answers.

- -354
- -355
- -208
- 32

18. The graph shows the height, in metres, of a rider, above and below the centre of a Ferris wheel, for the first minute of the ride.



- What is the height of a rider, relative to the centre, at the beginning of the ride?
 - What is the height of a rider, relative to the centre, after 15 s?
 - What is the approximate height of a rider, relative to the centre, after 25 s?
 - Describe the pattern in the graph.
19. a) The points $(2, 7)$ and $(-4, 1)$ are two vertices of a square. Determine all possible locations of the other two vertices of the square.
- b) How would your answers change if the two points were vertices of a rhombus?