Unit test | Algebra

Year 7 Algebra - Practice Test 2

Name: _____ Date: _____

18 questions | 40 marks | Show your working.

1. Solve $x + 6 = 17$. [1 mark]

2. Solve $x - 7 = 12$. [1 mark]

3. Solve $4x = 32$. [1 mark]

4. Solve $\frac{x}{5} = 6$. [1 mark]

5. Solve $3x + 4 = 25$. Show your steps. Then put your answer back into the equation to check it. [3 marks]

6. Solve $4x - 5 = 31$. Show your steps. Then check your answer in the equation. [3 marks]

7. Find $3a + b$ when $a = 3$ and $b = 5$. Show your working. [2 marks]

8. Find $2(t + 4)$ when $t = 5$. Show your working. [2 marks]

9. Write an expression for each. [2 marks]

(a) Multiply m by 4, then add 6.

(b) Subtract 3 from k, then divide the result by 2.

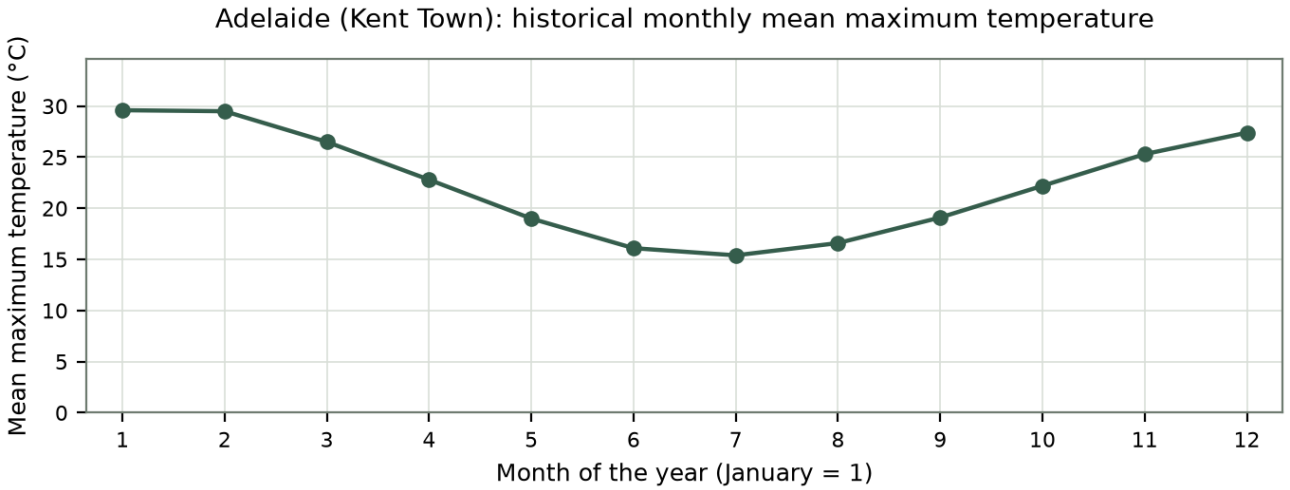
10. A bag of beads costs b dollars. A tube of glue costs 2 dollars. Each kit has one bag and one tube. [3 marks]

(a) Write the cost of one kit.

(b) Write the cost of 3 kits.

(c) Explain why both costs must be multiplied by 3.

11. A group bus trip costs $C = 2n + 5$ dollars for n people. Find the cost for 6 people. Show your working. [2 marks]



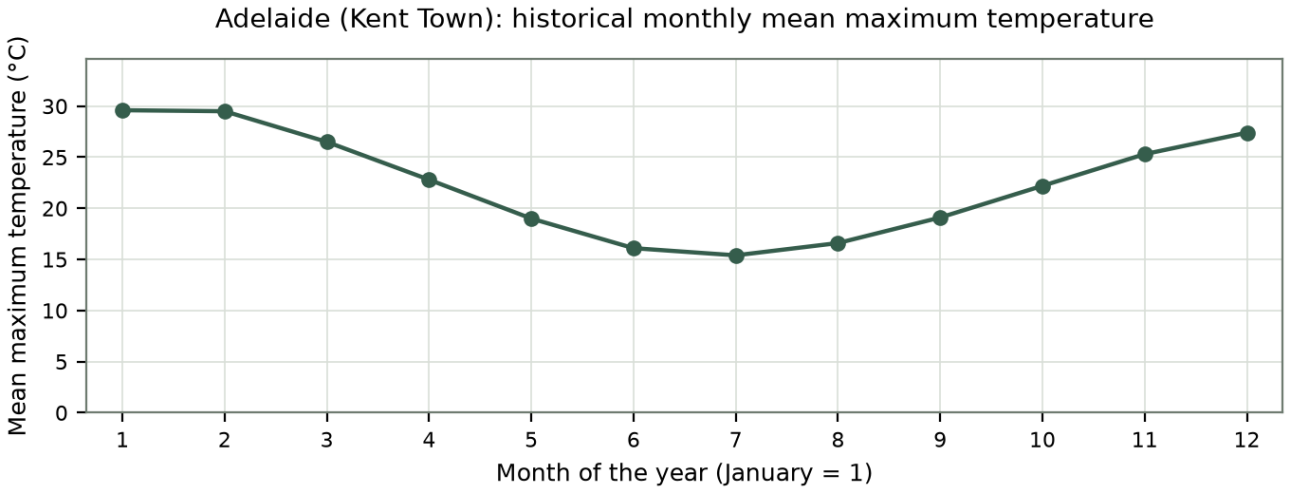
Bureau of Meteorology | Adelaide (Kent Town), station 023090 | Historical monthly mean maximums, 1977-2020.

12. Use the graph. Some values are January 29.6 °C, February 29.5 °C, July 15.4 °C and December 27.4 °C. [3 marks]

(a) What does the horizontal axis show?

(b) What does the vertical axis show? Include the unit.

(c) Which month has the highest value? Give its temperature.



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13. Use the same graph. [3 marks]

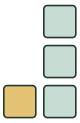
(a) Do the values rise or fall from July to December?

(b) Find the rise from July to December. Show your working.

(c) Can this graph tell you the highest temperature on one day next December? Explain.

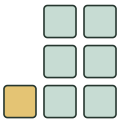
14. The picture shows a growing tile pattern. Let n be the stage and T the number of tiles. [3 marks]

Stage 1



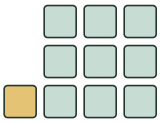
4 tiles

Stage 2



7 tiles

Stage 3



10 tiles

(a) Fill the gaps: $n: 1, 2, 3, 4$; $T: 4, 7, \square, \square$.

(b) Write a rule linking T and n.

(c) Use your rule to find the number of tiles at stage 10.

15. Use the grid to plot $T = 3n + 1$ for stages $n = 1, 2, 3, 4$. Label the horizontal axis n (stage) and the vertical axis T (tiles). Number both axes clearly. Plot four separate points. Do not join them. [2 marks]

16. Wire costs $C = 3l + 2$ dollars, where l is its length in metres. You can buy any length, including part of a metre. [4 marks]

(a) Make a table for $l = 0, 1, 2, 3, 4$.

(b) Plot the points on the grid. Label and number both axes. Join the points with a ruler.

(c) Use your graph to find the cost of 2.5 metres.

17. Use $C = pn + f$ for a total cost in dollars. Here, p is the price of one item, n is the number of items and f is a fee paid once. Keep $p = 3$ and $f = 4$. [2 marks]

(a) Find C for $n = 1, 2, 3$. Show your working in a table.

(b) How much does the cost rise for each extra item? Explain.

18. Use $C = pn + f$, with $n = 4$ and $f = 1$. [2 marks]

(a) Find the cost when $p = 2$ and when $p = 5$. Show your working.

(b) How much does the cost rise? Explain why.