# Grange Academy
# Relationships
# Unit 2 Assessment Practice


1. A straight line with gradient -3 passes through the point (7,-5).
Determine the equation of this straight line. (1)

2. Solve the inequation $5y - 12 > y + 4$ (3)

3. The Smiths go to visit the Ayrshire Calculator Museum.
They pay £18.15 for two adult tickets and three child tickets.
Write an equation to represent this information. (#1)

4. Solve this system of equations algebraically:

$$5m + 4n = 33$$
$$m - n = 3$$

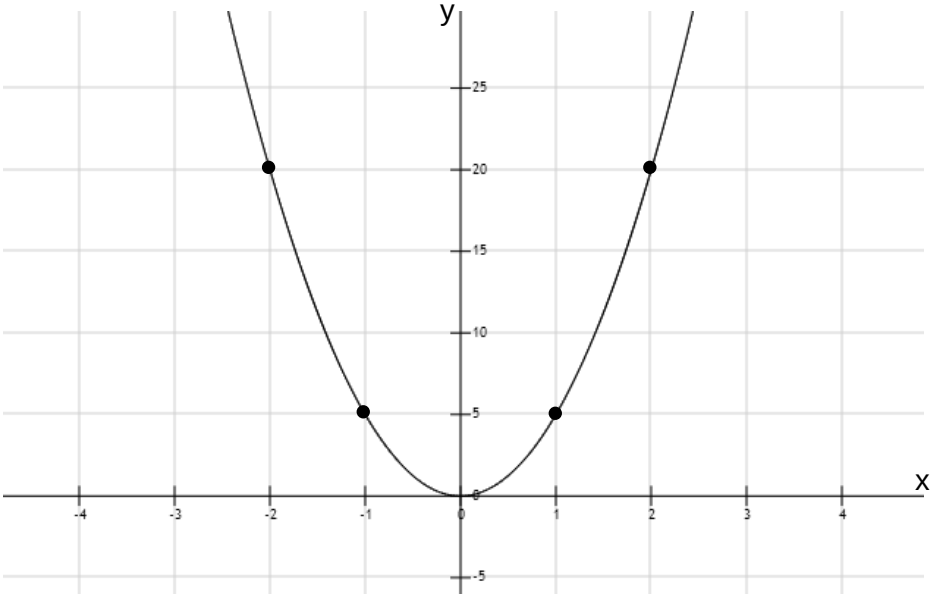
(3)

5. There is a well known "dating equation" that calculates the acceptable dating age of a girl (G) given the age of the boy (B):

$$G = \frac{7}{12}B + 7$$ (3)

Change the subject of the formula to B.

6. The diagram shows the parabola with equation $y = kx^2$.
What is the value of $k$?

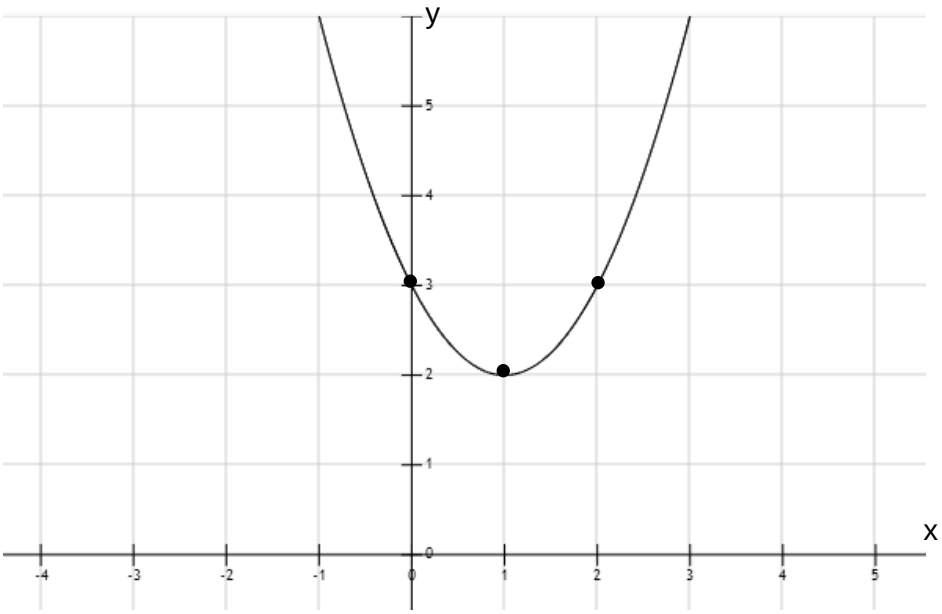



7. Sketch the graph $y = (x - 4)(x + 2)$.

Mark clearly where the graph crosses both axes and state the coordinates of the turning point. (3)

8. Solve the equation $(x + 1)(x - 7) = 0$. (1)

9. The equation of the quadratic function whose graph is shown below is of the form $y = (x + a)^2 + b$, where $a$ and $b$ are integers.




(2)

Write down the values of $a$ and $b$.

10. A parabola has equation $y = (x - 3)^2 - 4$.

a) Write down the equation of its axis of symmetry.

(3)

b) Write down the coordinates of the turning point on the parabola and state whether it is a minimum or a maximum.

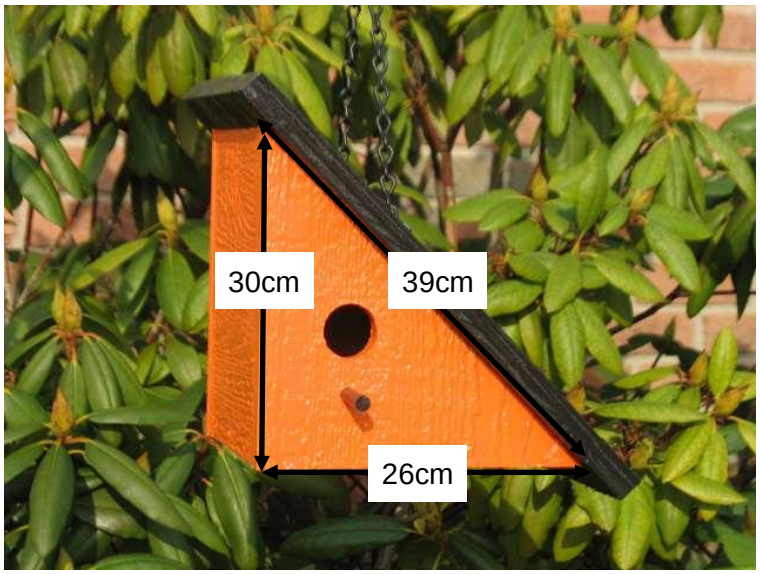
11. Solve the equation $x^2 - 2x - 4 = 0$ using the quadratic formula.

(4)

12. Determine the nature of the roots of the equation $3x^2 - 5x + 2 = 0$ using the discriminant.

(2)
#1

13. To pass quality control inspections, this bird house must have a perfect right angle. All necessary measurements taken by the inspectors are given in the diagram.




Will the bird house pass the inspection?

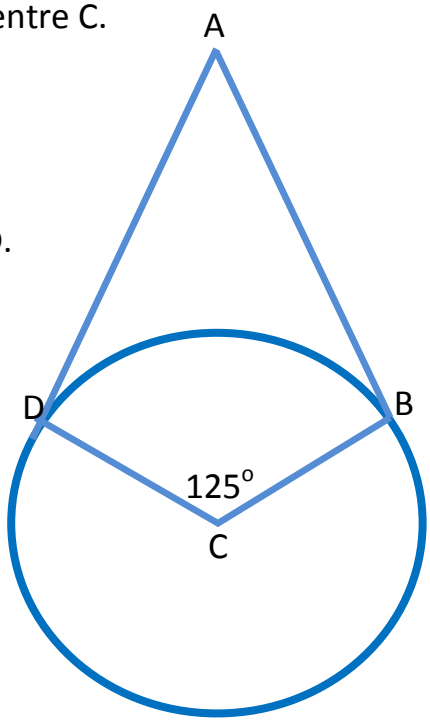
(2)
#1

14. The diagram shows kite ABCD and a circle with centre C.

AD is the tangent to the circle at D.

AB is the tangent to the circle at B.

Given that angle DCB is $125^{o}$, calculate angle BAD.




(3)

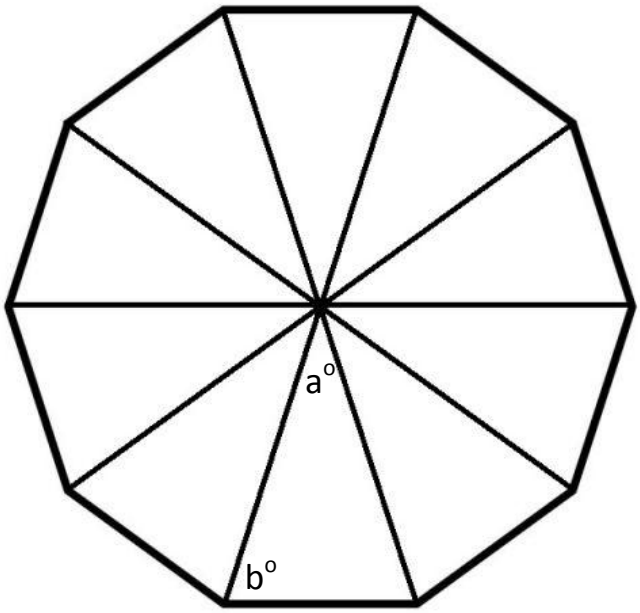
15. 

A large bottle of Jack Daniels whiskey holds 1000ml and is 25cm tall.

Their miniature version is 10cm tall. How much whiskey does this bottle hold? (2)

16. Here is a 10-sided regular decagon

Calculate the size of the marked angles.




(1)
#1

17. Sketch the graph of $y = 2\sin x^{o}$ for $0^{o} \leq x \leq 360^{o}$. (2)

18. Write down the period of the graph $y = \cos 4x^{o}$. (1)

19. Solve the equation $4 \tan x^{o} + 1 = 0$ for $0^{o} \leq x \leq 360^{o}$. (3)

**END OF ASSESSMENT**