## 6.1 Do Now: Quadratic graphs and transformations
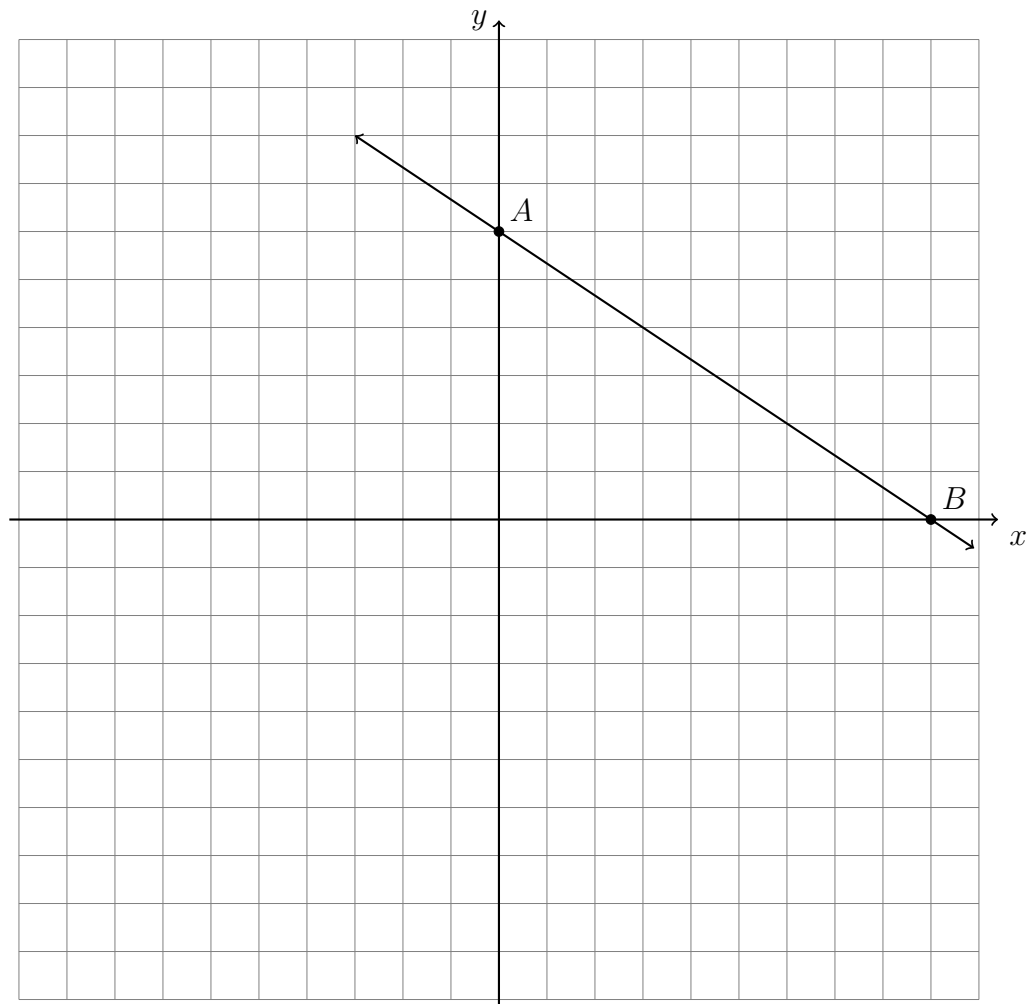
1. On the graph below, $\overleftrightarrow{AB}$ is shown with A(0, 6), B(9,0). A dilation of $k = \frac{2}{3}$ centered at the origin maps $\overleftrightarrow{AB} \to \overleftrightarrow{A'B'}$.

   Draw $\overleftrightarrow{A'B'}$ on the graph, labeling $A'$ and $B'$.



   (a) Write down the equation $\overleftrightarrow{AB}$

   (b) Write down the equation $\overleftrightarrow{A'B'}$

2. Given $f(x) = -x + 1$. Simplify $f(5)$.

3. Find $g(x) = \frac{1}{2}x - 3$ for $x = 6$.

4. Given $h(x) = \dfrac{2x - 3}{7}$. Evaluate the expression $h(-2)$.

5. The line $\overleftrightarrow{PQ}$ has the equation $y = 3x + 9$ with the two points' coordinates $P(0, a)$ and $Q(b, 0)$. Find the values of $a$ and $b$.

6. Simplify each expression ("Collect like terms")

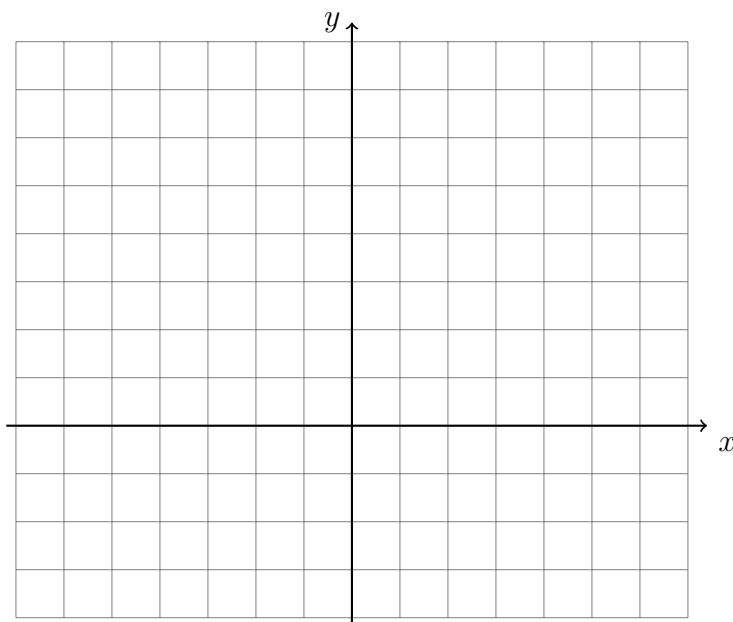   (a) $x^2 - 3x - 4 + 2x^2 + 2x + 4$        (b) $5(a^2 - 3a + 1) - 2(a^2 + 2a - 3)$

7. Graph and label the two equations. Mark their intersection as an ordered pair.

   $y = \frac{1}{2}x - 3$                                             $y = -2x + 7$

   Are the lines parallel, perpendicular, or neither? Justify your answer.



8. In the following two problems, solve for the value of $x$.
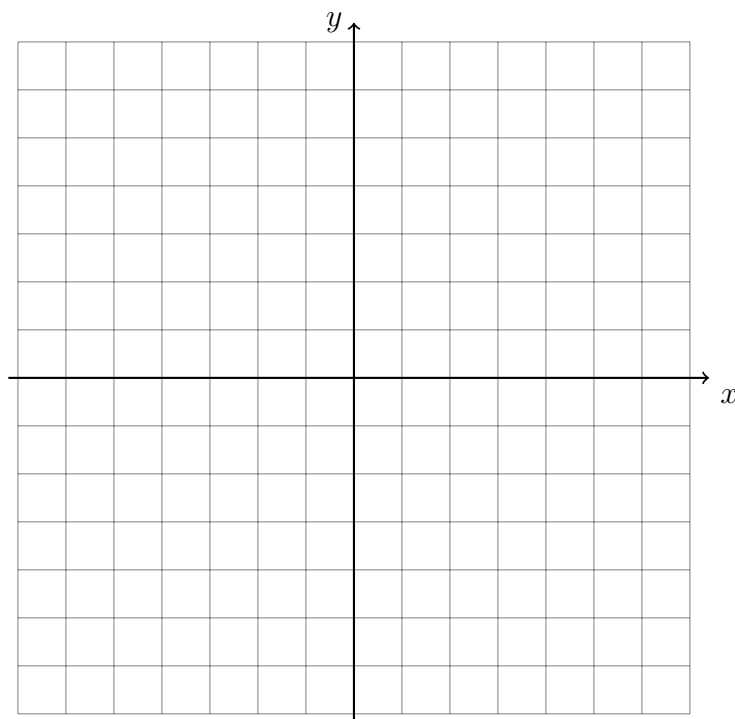
   (a) $\frac{2}{5}(8 - 3x) = 2$                           (b) $\frac{1}{3}(6 - 3x) = 11$

9. Solve for $y$, then graph and label, marking the intersection as an ordered pair.

$3x - 2y = 12$ $\qquad\qquad\qquad\qquad\qquad$ $\dfrac{3}{2}x + 3y = 6$



10. A dilation of $k = 2$ centered at the origin maps $\overline{AB} \to \overline{CD}$, with $A(0,2)$ and $B(4,0)$. Find the slopes and $y$-intercepts of $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$, and hence write down the equations of the two lines.