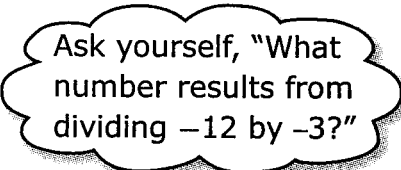## 10.1 Modelling and Solving One-Step Equations: $ax = b, \dfrac{x}{a} = b$

MathLinks 8, pages 370–379

Key Ideas Review

Match each method in column A with an example from column B.

A	B

1. Solve by inspection. _____
 	
 2. Model the equation using concrete materials, and then balance it.
 	
 _____
 	
 3. Perform the opposite operation on both sides of the equal sign.
 	
 _____
 	
 4. Check your solution by modelling or substitution.
 	
 _____
	a) $-3a = 12$
	 $\dfrac{-3a}{-3} = \dfrac{12}{-3}$
	 $a = -4$
	
	 b) Ask yourself, "What number results from dividing −12 by –3?"
	
	 c) $\boxed{-a} = \boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}$
	 $\boxed{-a} = \boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}$
	 $\boxed{-a} = \boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}$
	
	 d) Left Side $= -3a$ Right Side $= 12$
	     $= -3(-4)$
	     $= 12$
	 Left Side $=$ Right Side

Practise and Apply

5. Write the equation modelled by the diagrams.

a) $\boxed{r}\,\boxed{r} = \boxed{+1}\,\boxed{+1}\,\boxed{+1}\,\boxed{+1}\;/\;\boxed{+1}\,\boxed{+1}\,\boxed{+1}\,\boxed{+1}$

b) $\boxed{-s}\,\boxed{-s}\,\boxed{-s} = \boxed{+1}\,\boxed{+1}\,\boxed{+1}\;/\;\boxed{+1}\,\boxed{+1}\,\boxed{+1}\;/\;\boxed{+1}\,\boxed{+1}\,\boxed{+1}$

c) $\dfrac{x}{4}$ ⊘ $= \boxed{+1}\,\boxed{+1}\;/\;\boxed{+1}\,\boxed{+1}$

d) $\boxed{-m}\,\boxed{-m}\,\boxed{-m}\,\boxed{-m} = \boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}\;/\;\boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}\;/\;\boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}\;/\;\boxed{-1}\,\boxed{-1}\,\boxed{-1}\,\boxed{-1}$

6. Solve by inspection.

a) $-7g = 56$ b) $-81 = 9p$

c) $\frac{-n}{5} = -6$ d) $-7 = \frac{b}{3}$

7. Use models to solve each equation. Show your thinking.

a) $-9 = 3t$

b) $\frac{b}{4} = -2$

8. By what number would you divide both sides of the equation to solve it?

a) $14 = -7z$ b) $-8g = -64$

9. Solve each equation using the opposite operation. Check your answer.

a) $5a = -25$

b) $-63 = -7k$

10. By what number would you multiply both sides of the equation to solve it?

a) $\frac{x}{5} = -3$ b) $-9 = \frac{d}{-4}$

11. Show whether $y = 18$ is the solution to each equation.

a) $72 = \frac{y}{-4}$ b) $-9 = -2y$

c) $-3 = \frac{y}{-6}$ d) $2y = 36$

12. The cost of an adult ticket for a concert is three times the cost of a child's ticket. If an adult ticket costs $48 what is the cost for a child's ticket?

a) Write an equation to represent this problem. What does your variable represent?

b) Solve the equation. Verify your answer.

13. An LED light bulb lasts 50 times longer than an incandescent light bulb.

a) Write an equation to represent this situation.

b) If an incandescent light bulb lasts 1000 hours, how long does an LED light bulb last? Show your thinking.