

IB Math Studies 1 BELL WORK

Wayne has a collection of 2 cent and 5 cent stamps. He has three times as many 2 cent stamps as 5 cent stamps, and the total value of the stamps is 66 cents. How many 5 cent stamps does Wayne have?

$$5x + 2(3x) = 66 \quad x = 5¢$$
$$5x + 6x \quad 3x = 2¢$$

$$11x = 66$$

6 stamps 5¢

Chapter

4

Equations and formulae

Syllabus reference: 1.6

- Contents:**
- A** Algebraic substitution
 - B** Linear equations
 - C** Equations involving fractions
 - D** Solving equations using technology
 - E** Problem solving with linear equations
 - F** Formula substitution
 - G** Formula rearrangement
 - H** Linear simultaneous equations
 - I** Problem solving with simultaneous equations
 - J** Quadratic equations
 - K** Problem solving with quadratics



D**SOLVING EQUATIONS USING TECHNOLOGY**

Use technology to solve the following:

a $5.4x + 7.2 = 15.6$

b $0.05x - 9.6 = 3.5$

$$y = 5.4x + 7.2$$

$$y = 15.6$$

$$1.\overline{5} = x$$

$$1.56 = x$$

The total cost of sinking a bore is given by the rule $C = 15d + 350$ dollars where d is the depth in metres. How deep a bore can a farmer obtain for a cost of:

a \$2000

b \$3200?

$$y_1 = 15x + 350$$

a $y_2 = 2000$
 $x = 110$

b $y_3 = 3200$
 $x = 190$

Window

y	min	1500
	max	3700
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x	min	0
	max	500

F**FORMULA SUBSTITUTION**

When a car travels d kilometres in time t hours, the average speed for the journey is given by

$$s = \frac{d}{t} \text{ km h}^{-1}. \text{ Find:}$$

- a** the average speed of a car which travels 200 km in $2\frac{1}{2}$ hours

- b** the distance travelled by a car in $3\frac{1}{4}$ hours if its average speed is 80 km h^{-1}

- c** the time taken, to the nearest minute, for a car to travel 865 km at an average speed of 110 km h^{-1} .

G**FORMULA REARRANGEMENT**

a Make a the subject of the formula $K = \frac{d}{2ab}$.

b Find the value of a when:

i $K = 112$, $d = 24$, $b = 2$

ii $K = 400$, $d = 72$, $b = 0.4$

H

LINEAR SIMULTANEOUS EQUATIONS

USING TECHNOLOGY

Does anyone know how to use the system matrices solver on your calculator?

$$\begin{aligned}3x + 5y &= 27 \\ -2x + 7y &= 15\end{aligned}$$

GRAPHICAL METHOD

Use graphical methods to solve:

$$\mathbf{a} \quad \begin{cases} y = x - 2 \\ y = -2x + 10 \end{cases}$$

$$\mathbf{b} \quad \begin{cases} y = 5 - x \\ 3x + 3y = 15 \end{cases}$$

Complete:

Exercises

4F # 7, 8

4G # 1, 4

4H.1 # 2a-b

4 H.2 # 2 a-c

4 I # 1, 2, 3, 4, 6