Math 6
WORKBOOK

Using Variables

Name: _____

Section: _____

Date: _____

(c) Use the graph to estimate x when:

(i) $3x + 2 = 18$

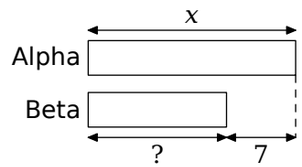
(ii) $3x + 2 = 10$

(d) Interpret the solutions in question (c). For example:

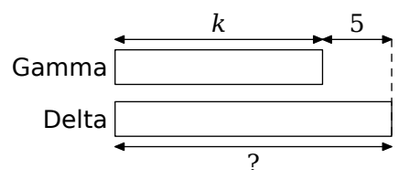
When the length of the field is ...

Exercise 1

1. Alpha has x dollars. Beta has \$7 less than Alpha. How many dollars does Beta have? Write your answer in terms of x.



2. Gamma has k songs stored on her MP3 player. Gamma has 5 fewer songs than Delta. How many songs does Delta have? Write your answer in terms of k.



3. Epsilon is w centimeters tall. Last year, she was 12 cm shorter. What was Epsilon's height last year? Write your answer in terms of w.

4. A shirt costs \$15. Zeta sells the shirt for \$$y$ profit. How much does Zeta sell the shirt for? Write your answer in terms of y.

5. A bunch of grapes weighs p grams. It is packed in a bag that weighs 20 grams. What is the total weight of the grapes and the bag? Express the answer in terms of p.

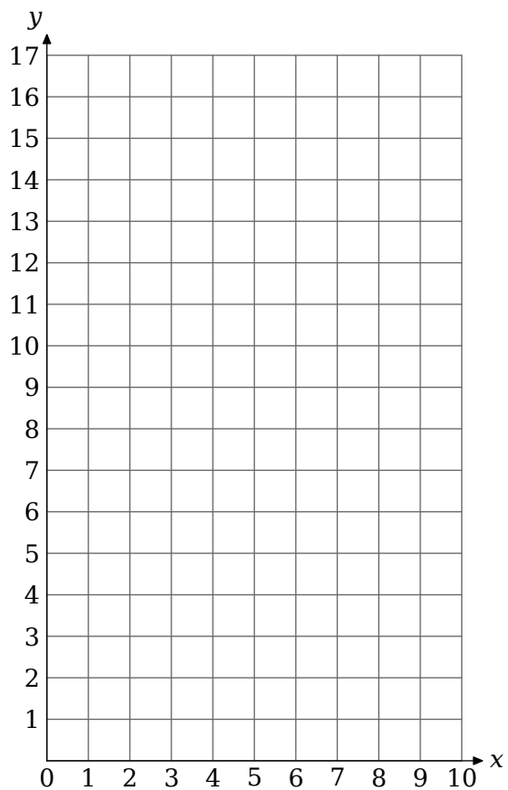
6. A book costs \$$m$. Eta gives \$10 to the cashier. How much change will Eta receive. Express your answer in terms of m.

3. Given that the length of a rectangular field is 2 meters longer than three times its width, then the equation $y = 3x+2$ describes the relationship between then length (y) and the width (x) of the rectangular field.

(a) Complete the table.

Width (x) in m	**1**	**2**	**3**	**4**	**5**
Length (y) in m					

(b) Graph $y = 3x + 2$ on the coordinate plane below.



2. The chart shows the line $y = 3x - 1$. Use the chart to solve the following:

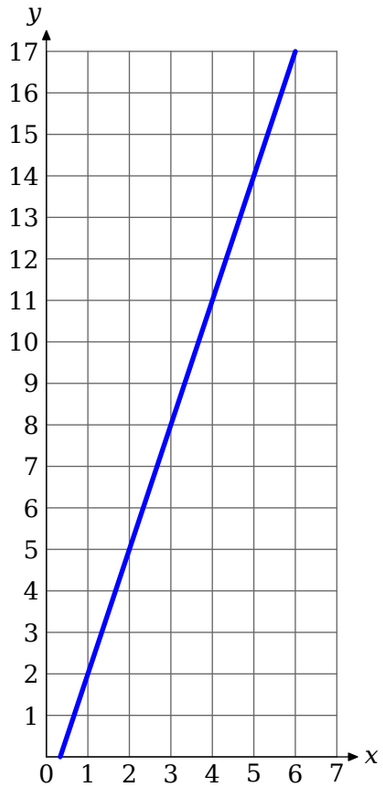
(a) When $3x - 1 = 2$, $x =$ _____

(b) When $3x - 1 = 5$, $x =$ _____

(c) When $3x - 1 = 11$, $x =$ _____

(d) When $3x - 1 = 12$, $x =$ _____

(e) When $3x - 1 = 16$, $x =$ _____



7. Theta has n seashells. Iota has 5 more seashells than Theta. Kappa has 4 fewer seashells than Theta.

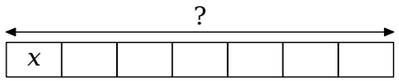
(a) How many seashells does Iota have? Write your answer in terms of n.

(b) How many seashells does Kappa have. Express the answer in terms of n.

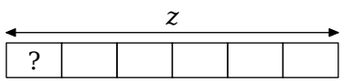
(c) How many seashells do Theta and Iota have in all? Write the answer in terms of n.

Exercise 2

1. A piece of ribbon is x inches long. Find the total length of 7 equal pieces of ribbon. Express the answer in terms of x.



2. Lambda has z gel pens. She divides the gel pens equally among her 6 nephews. Find the number of gel pens each boy receives. Write the answer in terms of z.



3. Mu has d muffins. He packs the muffins equally into 4 bags. How many muffins does each bag contain? Express your answer in terms of d.

Exercise 9

1. The graph shows the line $y = 2x + 3$. Use the graph to solve the following:

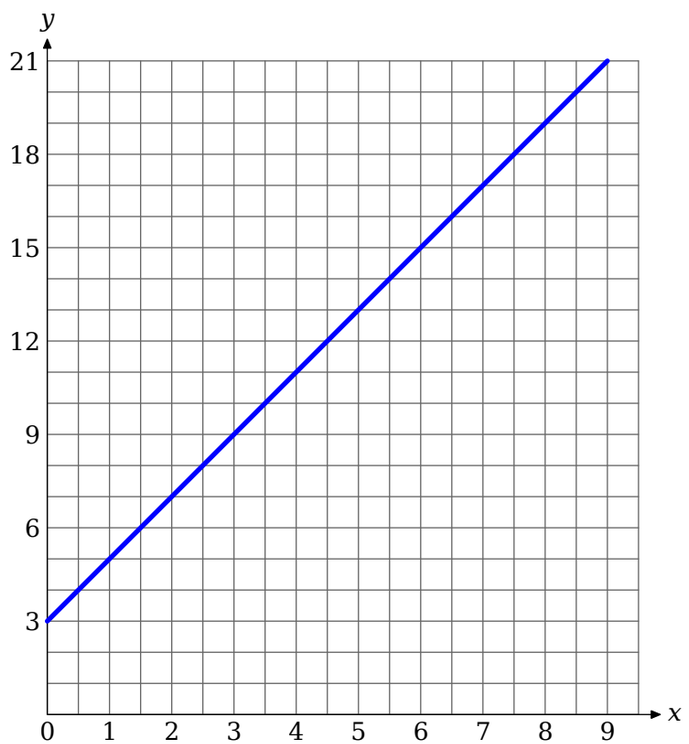
(a) When $2x + 3 = 3$, $x =$ _____

(b) When $2x + 3 = 5$, $x =$ _____

(c) When $2x + 3 = 11$, $x =$ _____

(d) When $2x + 3 = 16$, $x =$ _____

(e) When $2x + 3 = 20$, $x =$ _____



4. The graph shows the line $y = x - 4$. Use the graph to solve the following:

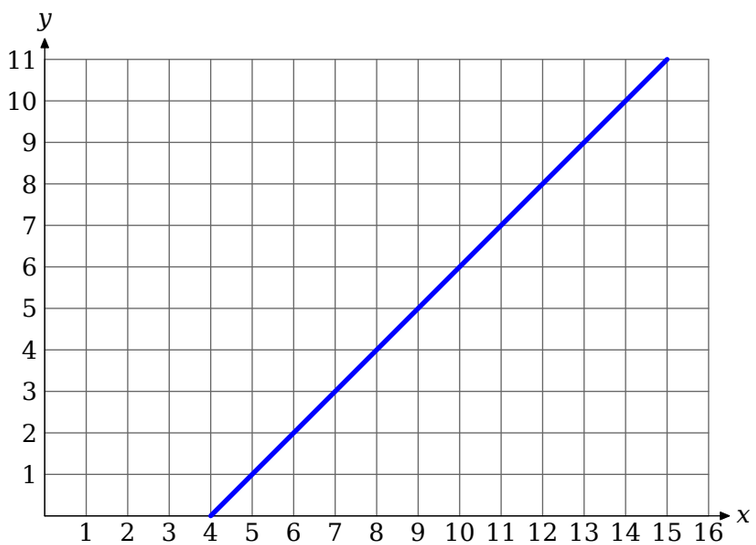
(a) When $x - 4 = 2$, $x =$ _____

(b) When $x - 4 = 5$, $x =$ _____

(c) When $x - 4 = 7$, $x =$ _____

(d) When $x - 4 = 9$, $x =$ _____

(e) When $x - 4 = 10$, $x =$ _____



4. Nu has m rows of plants in her garden. There are 3 plants in every row. How many plants does she have? Write your answer in terms of m

5. A chair costs \$$y$. Xi bought 4 such chairs. How much did she pay for the 4 chairs? Express the answer in terms of y.

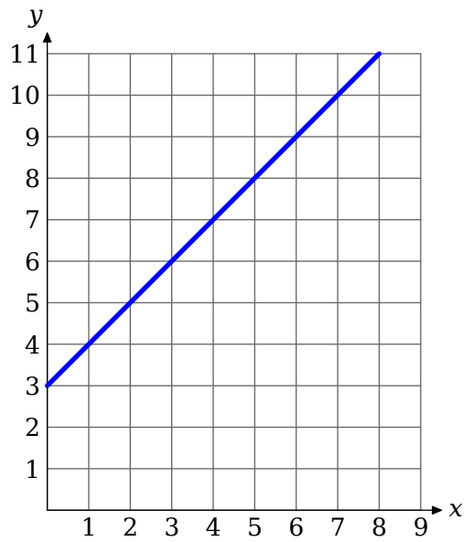
6. Omicron saves $\$p$ per month. He saves twice as much as Rho. Sigma saves twice as much as Omicron in each month.

(a) How much money does Rho save each month? Express the answer in terms of p.

(b) How much money does Sigma save in a month? Express the answer in terms of p.

(c) How much money do Omicron and Rho save combined? Express the answer in terms of p.

3. The graph shows the line $y = x + 3$.



Use the graph to solve the following:

(a) When $x + 3 = 3$, $x =$ _____

(b) When $x + 3 = 6$, $x =$ _____

(c) When $x + 3 = 8$, $x =$ _____

(d) When $x + 3 = 9$, $x =$ _____

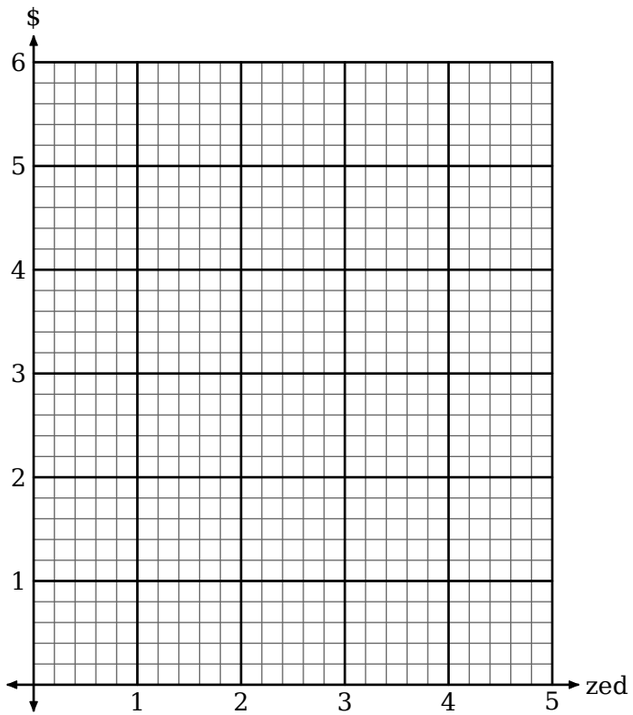
(e) When $x + 3 = 11$, $x =$ _____

2. In Zedland, the currency is 'zed', and 1 zed = $1.50.

zed	$
1	1.5
2	
3	
4	

(a) Complete the table.

(b) Graph the relationship between zed and $.



(c) Use the graph to find the missing numbers:

(i) 2.40 zed = $_____

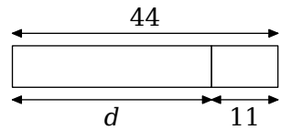
(ii) $5.40 = _____ zed

(iii) 3.60 zed = $_____

(iv) $4.80 = _____ zed

Exercise 3

1. Write an equation shown by the bar model. Find the value of d.



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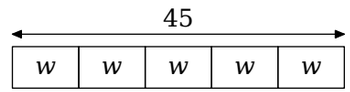
2. Write an equation shown by the bar model. Find the value of w.



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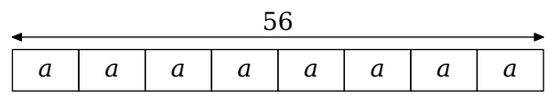
3. Write an equation shown by the bar model. Find the value of a.



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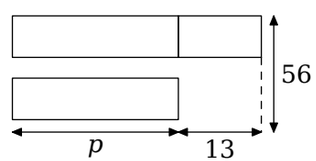
4. Write an equation shown by the bar model. Find the value of p.



5. Solve each equation:

(a) $x + 2 = 7$

(b) $2j = 18$

(c) $5m = 30$

(d) $y + 12 = 13$

(e) $3t = 36$

(f) $z + 6 = 6$

(g) $a + 1.5 = 6$

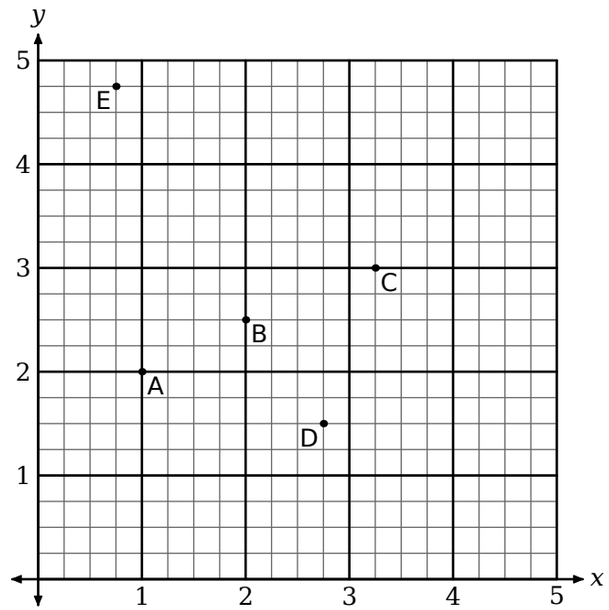
(h) $4w = 18$

(i) $3p + 1 = 10$

(j) $7q + 13 = 52$

Exercise 8

1. The graph shows points A to E.



(a) Identify the locations

(i) A = (_____, _____)

(ii) B = (_____, _____)

(iii) C = (_____, _____)

(iv) D = (_____, _____)

(b) Graph the points F to I:

(i) F = (1.5, 4)

(ii) G = (2, 3.5)

(iii) H =(0.25, 3.75)

(iv) I = (2.75, 4.5)

3. The entrance fees to a museum are as follows:

	Adults	**Children**	**Seniors**
Entrance Fee	\$a	\$b	\$c

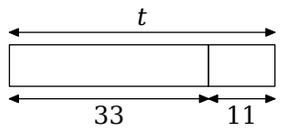
(a) Gamma bought 3 adult tickets and 1 senior citizen ticket. Find the amount she paid for the tickets. Write the answer in terms of a and c.

(b) Delta bought 1 adult ticket, 3 children tickets, and 1 senior citizen ticket (for Mr. K.) Find the amount Delta paid for the tickets. Express your answer in terms of a, b, and c.

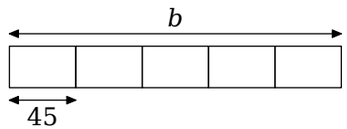
(c) If $a = 10$, $b = 5$, and $c = 6$, find the total amount that Delta and Gamma paid.

Exercise 4

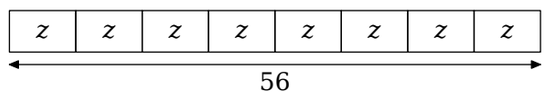
1. Write an equation shown by the bar model. Find the value of t.



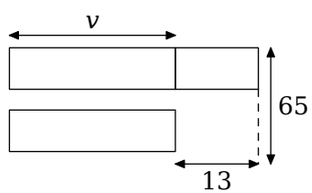
2. Write an equation shown by the bar model. Find the value of b.



3. Write an equation shown by the bar model. Find the value of z.



4. Write an equation shown by the bar model. Find the value of v.



5. Solve each equation:

(a) $x - 4 = 7$

(b) $\frac{1}{3}j = 18$

(c) $\frac{m}{5} = 40$

(d) $y - 15 = 13$

(e) $\frac{1}{2}t = 36$

(f) $z - 4 = 6$

(g) $a - 2.5 = 7$

(h) $\frac{w}{6} = 18$

(i) $3p - 4 = 8$

(j) $\frac{1}{7}q - 9 = 0$

Exercise 7

1. Alpha buys t 2-yard ribbons, v 3-yard ribbons, and w 5-yd ribbons.

(a) Find the total length of ribbons Alpha buys. Write your answer in terms of t, v, and w.

(b) If $t = 5$, $v = 4$, and $w = 3$, find the total length of ribbon that Alpha buys.

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2. Bravo saves j nickels, k dimes, and m quarters every day.

(a) How much money does he save per day? Express your answer n terms of j, k, and m.

(b) If $j = 4$, $k = 5$, and $m = 2$, how much money does Bravo save per day?

3. At FoodMart, a taco is sold at $\$x$. A sandwich is the same price. A drink costs $\$z$.

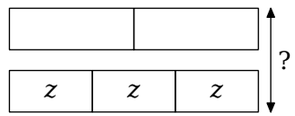
(a) Omega buys 4 tacos, a sandwich, and 2 drinks. Find the total cost. Express the answer in terms of x and z.

(b) Omega uses a \$20 bill to pay for the food. How much change is she due? Write your answer in terms of x and z.

(c) If $x = 3$ and $z = 1$, how much does the food cost?

Exercise 5

1. Red marbles are packed in cartons of w marbles each. Blue marbles are packed in bags of z marbles each. Find the total number of marbles in 2 cartons and 3 bags. Express your answer in terms of w and z.



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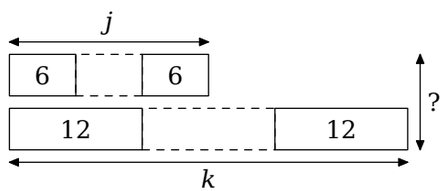
2. Tau buys j bags of $\frac{1}{2}$ dozen red apples. She also buys k bags of a dozen green apples. How many apples does Tau buy in all? Write your answer in terms of j and k.



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3. Upsilon has w nickels and y dimes. How many cents does he have. Express the answer in terms of w and y.

4. Two telephone companies charge the following rates for international calls.

	Company A	Company B
Charges per minute	r¢	q¢

(a) What is the amount of money Company A charges for a 10-minute call? Write the answer in terms of r.

(b) The rate of Company A is less than Company B. Find the amount of money that Phi saves for a 10-minute call. Express the answer in terms of r and q.

(c) If $r = 18$ and $q = 20$, find the amount of money that Phi saves for a 10-minute call.

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5. A cupcake costs p cents and a muffin costs q cents.

(a) Find the total cost of 3 cupcakes and 5 muffins. Express the answer in terms of p and q.

(b) If $p = 50$ and $q = 60$, find the cost of 3 cupcakes and 5 muffins.

Exercise 6

1. Chi pays \$$x$ for 3 mathematics books and \$$y$ for 2 science books. Psi buys a mathematics book and an science book.

(a) Find the amount Psi pays for the two books. Express the answer in terms of x and y.

(b) If $x = 24$ and $y = 30$, find the amount that Psi pays.

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2. A bag of oregano weighs m grams. Two bags of pepper weigh n grams.

(a) Find the difference in the weight of 3 bags of oregano and a bag of pepper. Express the answer in terms of m and n.

(b) If $m = 200$ and $n = 300$, what is the difference in weight?