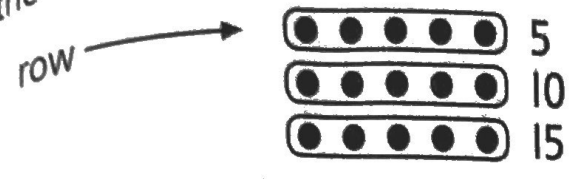


In the array, there are 3 rows of dots. There are 5 dots in each row.



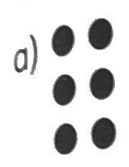
Eddy counts the dots by skip counting. 5, 10, 15.

He writes a multiplication sentence for the array.

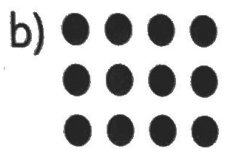
$$3 \times 5 = 15$$

3 rows of 5 dots is 15 dots.

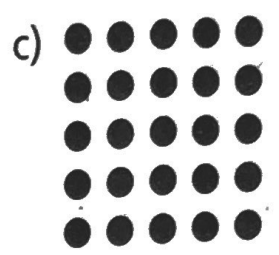
1. Count the rows. Count the dots in one row.



3 rows  
2 dots in each row

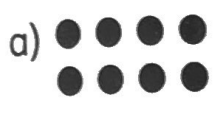


3 rows  
4 dots in each row

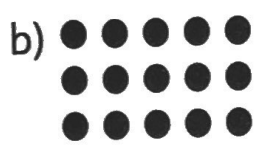


5 rows  
5 dots in each row

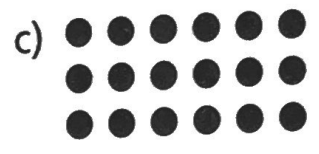
2. Count the rows. Count the dots in one row. Write a multiplication sentence. Find the answer by skip counting.



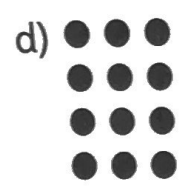
2 rows  
4 dots in each row  
 $2 \times 4 = 8$



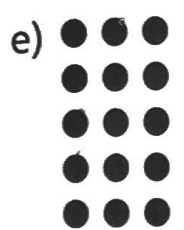
3 rows  
5 dots in each row  
 $3 \times 5 = 15$



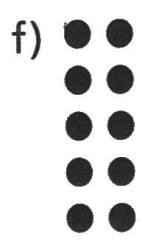
3 rows  
6 dots in each row  
 $3 \times 6 = 18$



4 rows  
3 dots in each row  
 $4 \times 3 = 12$



5 rows  
3 dots in each row  
 $5 \times 3 = 15$



5 rows  
2 dots in each row  
 $5 \times 2 = 10$

3. Draw an array. Write a multiplication sentence.

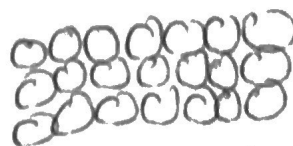
a) 2 rows      3 dots in each row



$$\underline{2 \times 3 = 6}$$

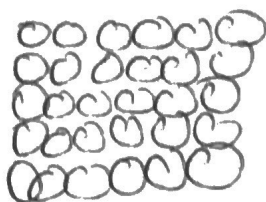
b) 3 rows

7 dots in each row



$$\underline{3 \times 7 = 21}$$

c) 5 rows      6 dots in each row



$$\underline{5 \times 6 = 30}$$

d) 4 rows

5 dots in each row



$$\underline{4 \times 5 = 20}$$

4. Draw an array. Write a multiplication sentence.

a) On a bus, 4 people can sit in a row.  
There are 5 rows of seats on the bus.  
How many people can ride on the bus?

$$\underline{5 \times 4 = 20}$$



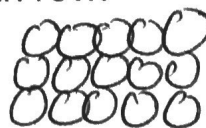
b) Liz puts 6 stamps in each row of her stamp book.  
There are 3 rows of stamps.  
How many stamps are there altogether?

$$\underline{3 \times 6 = 18}$$



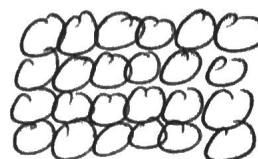
c) John plants 3 rows of trees with 5 trees in each row.  
How many trees did he plant?

$$\underline{3 \times 5 = 15}$$





d) There are 4 rows of candles on a shelf.  
There are 6 candles in each row.  
How many candles are there altogether?


$$\underline{4 \times 6 = 24}$$

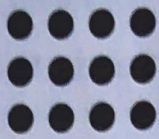


5. Write a multiplication sentence for each array.

a)  4 rows  
2 dots in each row  
 $4 \times 2 = 8$

 2 rows  
4 dots in each row  
 $2 \times 4 = 8$

b)  4 rows  
3 dots in each row  
 $4 \times 3 = 12$

 3 rows  
4 dots in each row  
 $3 \times 4 = 12$

**REMINDER** ▶ The result of multiplying two numbers is called a **product**.

The product of 3 and 4 is 3 times 4 or 12.

6. Explain why the products in Question 5.a) are the same.

When you multiply the same numbers in a different order, you get the same answer.


$5 \times 3 = 3 \times 5$


This is called the **commutative property** of multiplication.


7. Find the product using the commutative property.

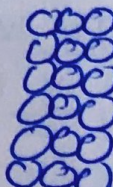
a)  $6 \times 3 = 18$     b)  $7 \times 4 = 28$     c)  $8 \times 6 = 48$     d)  $9 \times 4 = 36$   
 so  $3 \times 6 = 18$     so  $4 \times 7 = 28$     so  $6 \times 8 = 48$     so  $4 \times 9 = 36$

8. Draw an array to show the product.

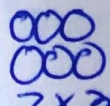

a)  $5 \times 4$  

b)  $5 \times 2$  

c)  $4 \times 7$  

d)  $6 \times 3$  


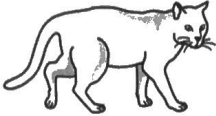


9. Draw an array showing  $2 \times 3$  and  $3 \times 2$ . Are the products  $2 \times 3$  and  $3 \times 2$  the same or different? How do you know?

  $2 \times 3$       $3 \times 2$

Products are the same because there is the same number of dots.

# NS3-38 Concepts in Multiplication (I)

1. Use skip counting to find out how many legs the animals have.

Animal	Number of Animals						
	1	2	3	4	5	6	7
	2	4	6	8	10	12	14
	4	8	12	16	20	24	28
	6	12	18	24	30	36	42
	8	16	24	32	40	48	56

2. A hockey line has 5 players. Fill in the missing information.

<u>4</u> lines	$5 + 5 + 5 + 5$	$4 \times 5$
3 lines	$5 + 5 + 5$	$3 \times 5$
5 lines	$5 + 5 + 5 + 5 + 5$	$5 \times 5$
<u>2</u> lines	$5 + 5$	$2 \times 5$

3. Fill in the missing numbers.

a) 4, 8, 12, 16, 20

b) 5, 10, 15, 20, 25

c) 3, 6, 9, 12, 15

d) 2, 4, 6, 8, 10

e) ~~10~~ 9, 12, 15, 18, 21

f) 10, 20, 30, 40, 50

g) 25, 35, 45, 55, 65

h) 16, 18, 20, 22, 24.

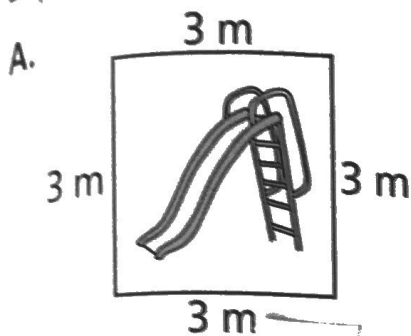
Mandy practices guitar twice a week. How many times will she practice in 4 weeks? 2

$$2 \times 4 = 8$$

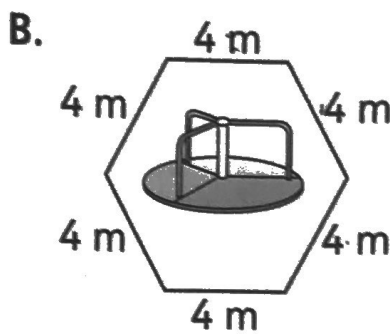
The table shows the price of tickets in dollars for a play. Fill in the missing numbers.

Tickets	1	2	3	4	5
Price	5	10	15	20	25

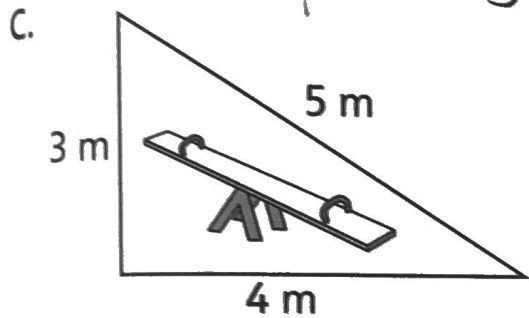
a) Can you use multiplication to find the perimeter of the playground? If yes, write a multiplication sentence. If no, use addition.



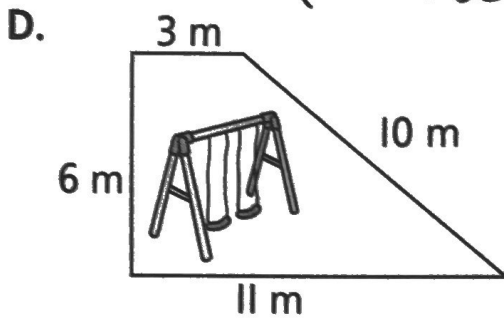
Perimeter =  $4 \times 3 = 12m$   
(4 sides of 3)



Perimeter =  $6 \times 4 = 24m$   
(6 sides of 4)



Perimeter =  $5 + 4 + 3 = 12m$








Perimeter =  $10 + 11 + 6 + 3 = 30m$

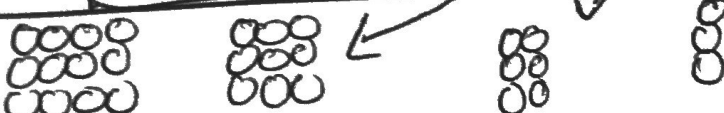
b) For which shapes in part a) can you write a multiplication A+B. These shapes sentence? How are these shapes different from the other shapes? have equal sides.

c) Which playground will need the longest fence around it? Which will need the shortest fence? Playground D will have the longest fence and playgrounds A+C the shortest.

7. Create a multiplication word problem using the numbers 4 and 6. Answers will vary.

				
$2 \times 4 = 8$	$2 \times 3 = 6$	$2 \times 2 = 4$	$2 \times 1 = 2$	$2 \times 0 = 0$

Draw a similar set of arrays for  $3 \times 4$ ,  $3 \times 3$ ,  $3 \times 2$ ,  $3 \times 1$ , and  $3 \times 0$ .

Number Sense 3-38 

# Multiplication Charts (2)

A multiplication chart shows the product of two numbers.

x	1	2	3	4	5	← 2nd number
1	1	2	3	4	5	
2	2	4	6	8	10	← product: 2 × 5 = 10

1. Use the multiplication chart to multiply.

a)  $2 \times 7 = \underline{14}$       b)  $3 \times 6 = \underline{18}$

c)  $4 \times 8 = \underline{32}$       d)  $5 \times 7 = \underline{35}$

e)  $4 \times 6 = \underline{24}$       f)  $3 \times 8 = \underline{24}$

g)  $4 \times 7 = \underline{28}$       h)  $4 \times 4 = \underline{16}$

x	1	2	3	4	5	6	7	8
1	1	2	3	4	5	6	7	8
2	2	4	6	8	10	12	14	16
3	3	6	9	12	15	18	21	24
4	4	8	12	16	20	24	28	32
5	5	10	15	20	25	30	35	40

2. Find the missing number.

a)  $3 \times 7 = \underline{21}$       b)  $4 \times 6 = \underline{24}$       c)  $2 \times 8 = \underline{16}$       d)  $5 \times 6 = \underline{30}$

e)  $\underline{2} \times 4 = 8$       f)  $\underline{3} \times 8 = 24$       g)  $\underline{3} \times 4 = 12$       h)  $6 \times \underline{3} = 18$

i)  $\underline{7} \times 2 = 14$       j)  $3 \times \underline{5} = 15$       k)  $4 \times 4 = \underline{16}$       l)  $\underline{6} \times 6 = 36$

3. a) Finish the multiplication chart.

b) Describe the pattern in the row for 3.

It increases by 3 each time.

c) Fill in the blanks.

The row for 2 is the same as the column for 2.

The row for 3 is the same as the column for 3.

The row for 4 is the same as the column for 4.

x	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

4. a) Use the completed half to quickly finish the empty half.

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	<del>54</del>	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

b) Describe any patterns you see in the row for 8.

It increases by 8 each time. The 'one's' digit pattern goes 8, 6, 4, 2, 0.

c) Look for even and odd numbers in the column for 7. What do you notice?

It is a pattern. It goes, Odd, even and repeats.

5. Compare the row for 2 with the row for 4. What do you notice?

2	4	6	8	10	12	14	16	18	20
4	8	12	16	20	24	28	32	36	40

The bottom number is double the top number.

# NS3-47 Concepts in Multiplication (2)

1. A stool has 3 legs. How many legs will 6 stools have? 18  
 $3 \times 6 = 18$  6 stools would have 18 legs.



2. Tessa multiplies 5 by a number less than 4. The ones digit of her answer is 0. What number did she multiply 5 by? 0 What is her answer? 0

3. a) There are 10 crayons in a box. How many crayons are in 5 boxes? 50  
 $10 \times 5 = 50$  There are 50 crayons in 5 boxes.

b) Pens come in packages of 4. How many pens are in 4 packages? 16  
 $4 \times 4 = 16$  There are 16 pens in 4 packages.

4. Find two numbers (3 and 0) so that the multiplication sentence  $\square \times \triangle = \square$  is true. The two numbers in the squares have to be the same. Answers will vary.

5. Find the sum and product of each pair of numbers.

	Sum	Product
3 and 4	7	12
2 and 5	7	10
1 and 7	8	7
2 and 2	4	4
Make your own: <u>3</u> and <u>9</u>	12	27

← Answers will vary.

6. Fill in the blanks. use the chart ↑

a) Two numbers whose product is bigger than their sum. 3 and 4

b) Two numbers whose sum is bigger than their product. 1 and 7

c) Two numbers whose sum and product are equal. 2 and 2

7. What do you get when you multiply a number by 1? you always get the number as the answer.  
 What is  $1 \times 100$ ? What is  $1 \times 732$ ?

100

732



Vehicle	Number of Wheels
Bicycle	2
Tricycle	3
Go-Cart	4



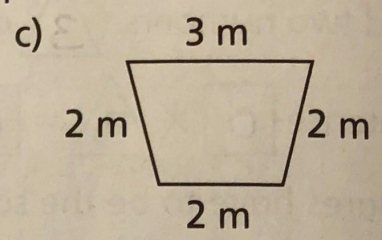
6 bicycles will have 12 wheels.

8. a) How many wheels do 6 bicycles have?  $6 \times 2 = 12$
- b) Do 5 tricycles have more wheels than 4 go-carts?  $3 \times 5 = 15$ ,  $4 \times 4 = 16$ . NO 4 go-carts have more wheels b/c 16 is bigger than 15.
- c) Jim counted 11 wheels on 3 vehicles. How many of each type of vehicle did he count? 1 Go-cart, 1 Tricycle, and 2 bicycles

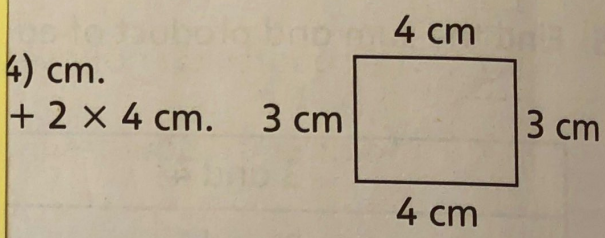
9. Write an addition and multiplication sentence for the perimeter.

a)  $4 + 5 + 4 + 5 = 18$

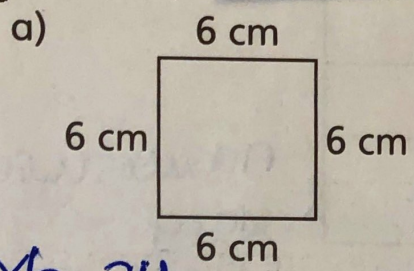
Do not worry about 9 + 10



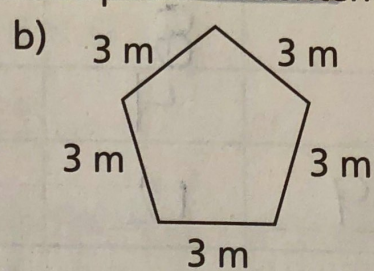
10. Iva says the perimeter is 16 cm. Tristan says the perimeter is 20 cm. Who is correct?



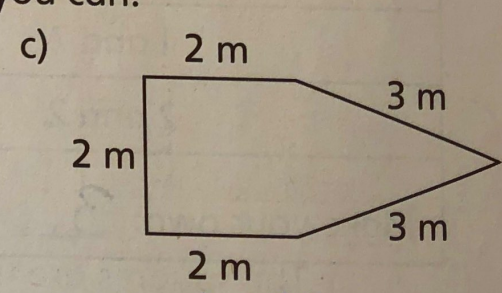
11. Find the perimeter. Write a multiplication sentence if you can.



$4 \times 6 = 24$  cm



$5 \times 3 = 15$  m



can't do

BONUS ► Mary draws a polygon on grid paper. She finds the perimeter of her polygon by writing  $4 \times 5 = 20$  cm. Draw Mary's polygon.

BONUS ► A box of 2 pencils costs 8 cents. A box of 3 pencils costs 10 cents. What is the cheapest way to buy 6 pencils?

BONUS ► Use the numbers 2, 3, and 4 to fill in the boxes.

a)  $(\square \times \triangle) + \text{pentagon} = 10$

b)  $(\square \times \triangle) - \text{pentagon} = 10$