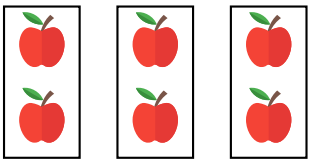
MULTIPLICATION

A DEFINITIONS

A.1 FINDING THE NUMBER OF GROUPS

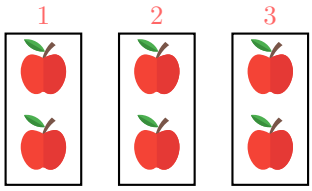
Ex 1:



There are $\boxed{3}$ groups of 2 apples.

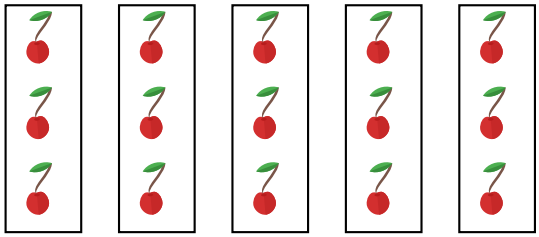
Answer:

- Count the groups:



- There are 3 groups of 2 apples.

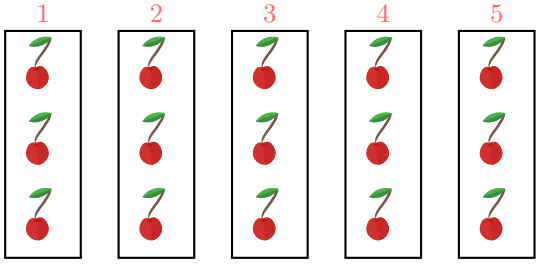
Ex 2:



There are $\boxed{5}$ groups of 3 cherries.

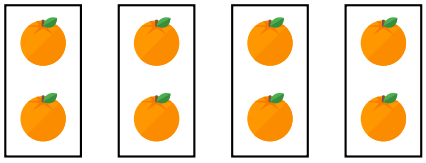
Answer:

- Count the groups:



- There are 5 groups of 3 cherries.

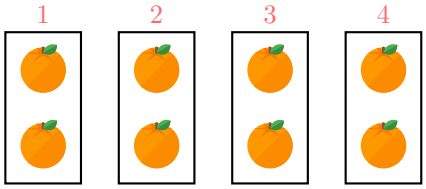
Ex 3:



There are $\boxed{4}$ groups of 2 oranges.

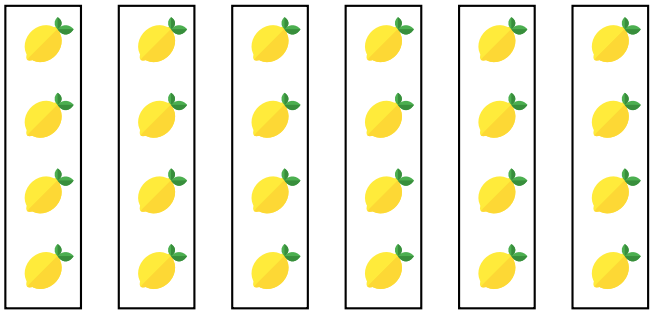
Answer:

- Count the groups:



- There are 4 groups of 2 oranges.

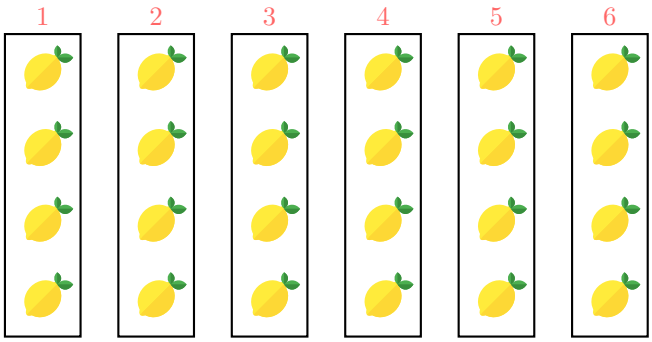
Ex 4:



There are $\boxed{6}$ groups of 4 lemons.

Answer:

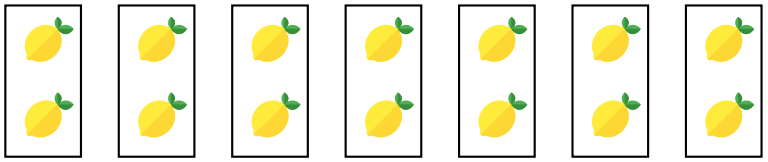
- Count the groups:



- There are 6 groups of 4 lemons.

A.2 FINDING THE NUMBER OF GROUPS

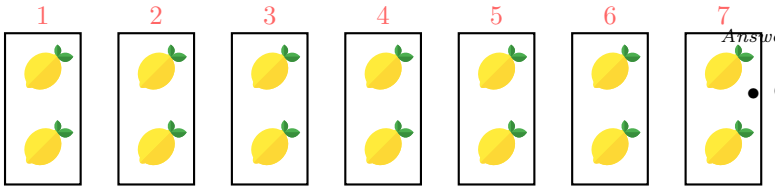
Ex 5:



There are $\boxed{7}\times 2$ lemons.

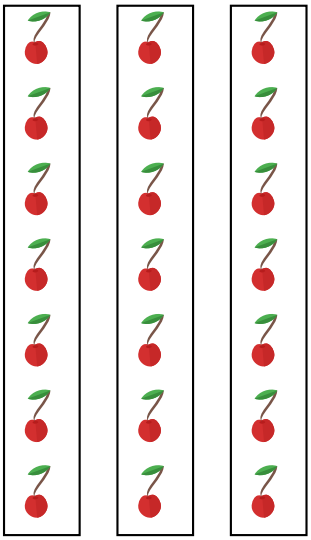
Answer:

- Count the number of groups:



- There are 7 groups of 2 lemons.
- There are 7×2 lemons.

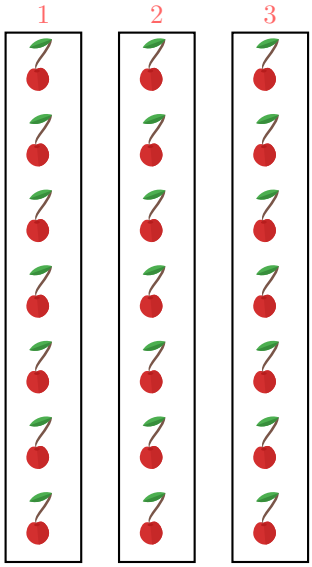
Ex 6:



There are $\boxed{3} \times 7$ cherries.

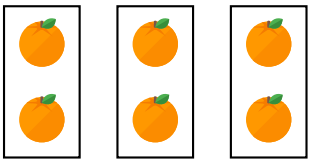
Answer:

- Count the number of groups:



- There are 3 groups of 7 cherries.
- There are 3×7 cherries.

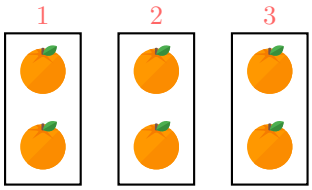
Ex 7:



There are $\boxed{3} \times 2$ oranges.

Answer:

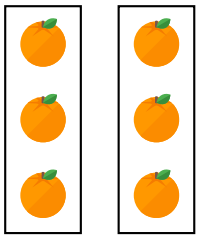
- Count the number of groups:



- There are 3 groups of 2 oranges.
- There are 3×2 oranges.

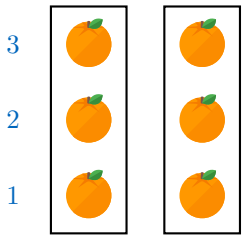
A.3 FINDING THE NUMBER OF GROUPS AND THE NUMBER OF FRUITS IN EACH GROUP

Ex 8:

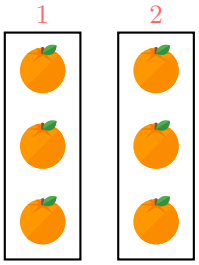


There are $\boxed{2}$ groups of $\boxed{3}$ oranges.

Answer:

- 

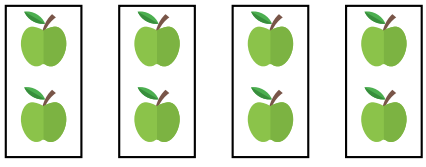
There are 3 oranges in each group.

- 

There are 2 groups.

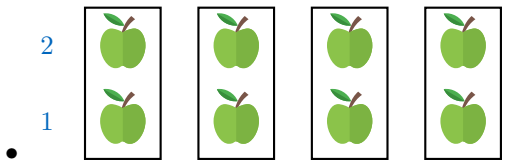
- There are 2 groups of 3 oranges.

Ex 9:

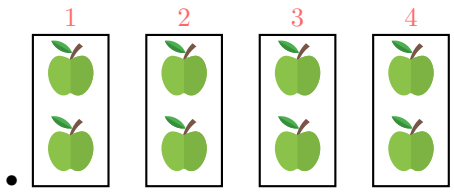


There are $\boxed{4}$ groups of $\boxed{2}$ apples.

Answer:



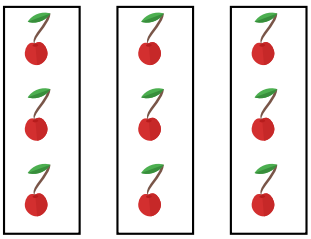
There are 2 apples in each group.



There are 4 groups.

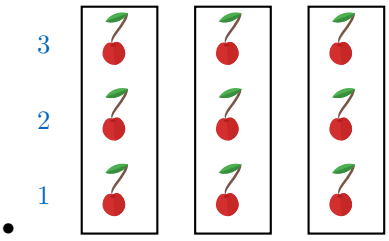
- There are 4 groups of 2 apples.

Ex 10:

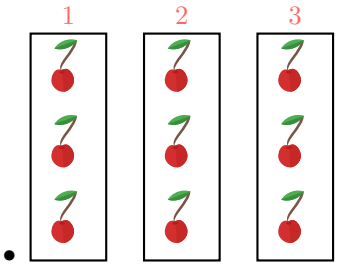


There are $\boxed{3}$ groups of $\boxed{3}$ cherries.

Answer:



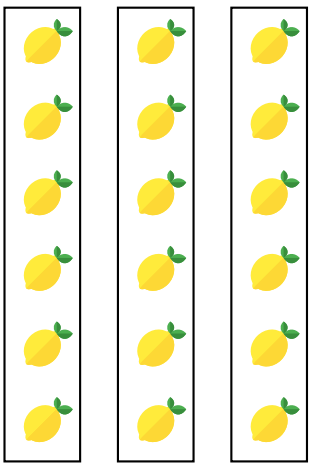
There are 3 cherries in each group.



There are 3 groups.

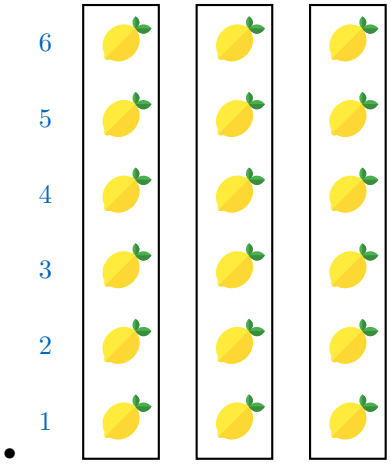
- There are 3 groups of 3 cherries.

Ex 11:

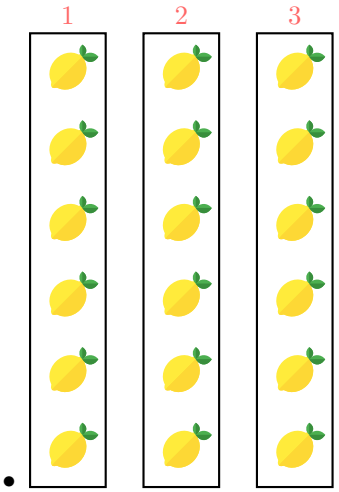


There are $\boxed{3}$ groups of $\boxed{6}$ lemons.

Answer:



There are 6 lemons in each group.



There are 3 groups.

- There are 3 groups of 6 lemons.

A.4 FINDING THE REPEATED ADDITIONS

Ex 12:

$$5+5+5=\boxed{3}\times 5$$

Answer:

- Count the number of 5s:

$$\overset{1}{5}+\overset{2}{5}+\overset{3}{5}$$

- $5+5+5=3\times 5$

Ex 13:

$$2+2+2+2=\boxed{4}\times 2$$

Answer:

- Count the number of 2s:

$$\overset{1}{2}+\overset{2}{2}+\overset{3}{2}+\overset{4}{2}$$

- $2+2+2+2=4\times 2$

Ex 14:

$$3+3+3=\boxed{3}\times 3$$

Answer:

- Count the number of 3s:

$$\overset{1}{3}+\overset{2}{3}+\overset{3}{3}$$

- $3+3+3=3\times 3$

Ex 15:

$$9+9+9+9+9=\boxed{5}\times 9$$

Answer:

- Count the number of 9s:

$$\overset{1}{9}+\overset{2}{9}+\overset{3}{9}+\overset{4}{9}+\overset{5}{9}$$

- $9+9+9+9+9=5\times 9$

A.5 IDENTIFYING MULTIPLICATIONS AND REPEATED ADDITIONS FROM WORDS

MCQ 16: Four times tree means:

Choose 2 answers:

☒ 4×3

☐ $4+3$

☐ $4-3$

☒ $3+3+3+3$

Answer:

- Four times tree means 4×3
- $4\times 3=3+3+3+3$

MCQ 17: Five times two means:

Choose 2 answers:

☒ 5×2

☒ $2+2+2+2+2$

☐ $5+2$

☐ $5-2$

Answer:

- Five times two means 5×2
- We can write 5×2 with a repeated addition $2+2+2+2+2$.

MCQ 18: Three times four means:

Choose 2 answers:

☒ 3×4

☒ $4+4+4$

☐ $3+4$

☐ $3+3+3$

Answer:

- Three times four means 3×4
- We can write 3×4 with a repeated addition $4+4+4$.

MCQ 19: Two times six means:

Choose 2 answers:

☐ $2+6$

☒ 2×6

☐ $2-6$

☒ $6+6$

Answer:

- Two times six means 2×6
- We can write 2×6 with a repeated addition $6+6$.

MCQ 20: Seven times one means:

Choose 2 answers:

☐ $7+7+7+7+7+7+7$

☐ $7-1$

☒ $1+1+1+1+1+1+1$

☒ 7×1

Answer:

- Seven times one means 7×1
- We can write 7×1 with a repeated addition $1+1+1+1+1+1+1$.

A.6 IDENTIFYING MULTIPLICATIONS AND REPEATED ADDITIONS FROM GROUPS

MCQ 21: Which choices mean 4 groups of 7?

Choose 2 answers:

- ☐ $4 + 7$
- ☒ $7 + 7 + 7 + 7$
- ☐ $7 \times 7 \times 7 \times 7$
- ☒ 4×7

Answer:

- We can show 4 groups of 7 using multiplication: 4×7.
- We can also write 4 groups of 7 as repeated addition: $7 + 7 + 7 + 7$.

MCQ 22: Which choices mean 5 groups of 10?

Choose 2 answers:

- ☒ 5×10
- ☒ $10 + 10 + 10 + 10 + 10$
- ☐ 5×5
- ☐ $5 + 10$

Answer:

- We can show 5 groups of 10 using multiplication: 5×10.
- We can also write 5 groups of 10 as repeated addition: $10 + 10 + 10 + 10 + 10$.

MCQ 23: Which choices mean 7 groups of 3?

Choose 2 answers:

- ☒ $3 + 3 + 3 + 3 + 3 + 3 + 3$
- ☐ $7 + 3$
- ☐ 7×7
- ☒ 7×3

Answer:

- We can show 7 groups of 3 using multiplication: 7×3.
- We can also write 7 groups of 3 as repeated addition: $3 + 3 + 3 + 3 + 3 + 3 + 3$.

MCQ 24: Which choices mean 6 groups of 5?

Choose 2 answers:

- ☒ $5 + 5 + 5 + 5 + 5 + 5$
- ☒ 6×5
- ☐ $6 + 5$
- ☐ $5 \times 5 \times 5 \times 5 \times 5 \times 5$

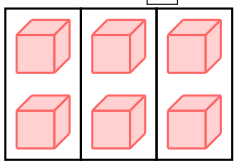
Answer:

- We can show 6 groups of 5 using multiplication: 6×5.
- We can also write 6 groups of 5 as repeated addition: $5 + 5 + 5 + 5 + 5 + 5$.

A.7 CALCULATING MULTIPLICATIONS USING CUBES

Ex 25:

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

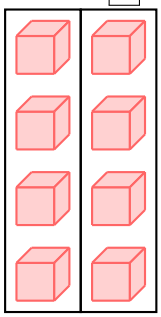


Answer:

$$3 \times 2 = 2 + 2 + 2$$
$$= 6$$

Ex 26:

$2 \times 4 = \boxed{8}$

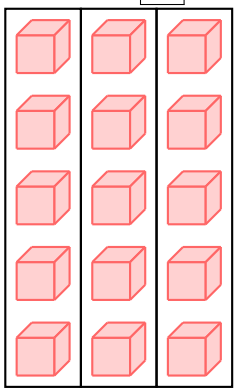


Answer:

$$2 \times 4 = 4 + 4$$
$$= 8$$

Ex 27:

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

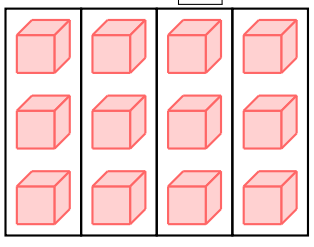


Answer:

$$3 \times 5 = 5 + 5 + 5$$
$$= 15$$

Ex 28:

$4 \times 3 = \boxed{12}$

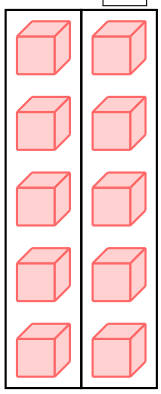


Answer:

$$4 \times 3 = 3 + 3 + 3 + 3$$
$$= 12$$

Ex 29:

$2 \times 5 = \boxed{10}$

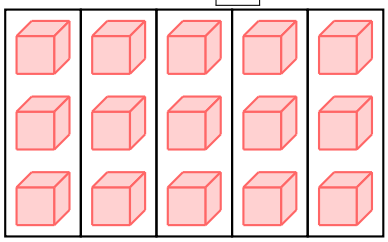


Answer:

$$2 \times 5 = 5 + 5$$
$$= 10$$

Ex 30:

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

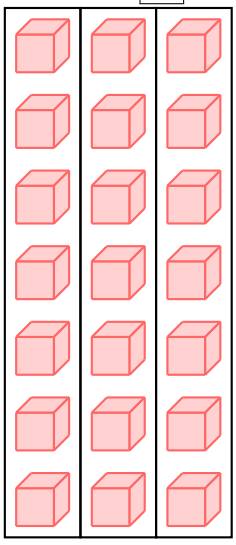


Answer:

$$5 \times 3 = 3 + 3 + 3 + 3 + 3$$
$$= 15$$

Ex 31:

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



Answer:

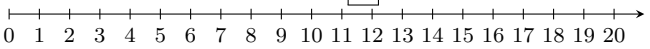
$$3 \times 7 = 7 + 7 + 7$$
$$= 14 + 7$$
$$= 21$$

B IN NUMBER NUMBER

B.1 CALCULATING MULTIPLICATIONS USING NUMBER LINE

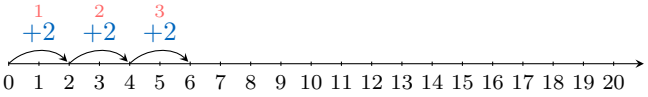
Ex 32:

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



Answer:

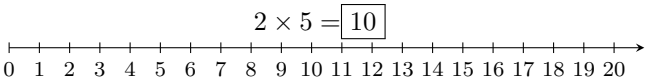
- Start from 0 and jump 2 steps to the right, 3 times.



- $3 \times 2 = 6$

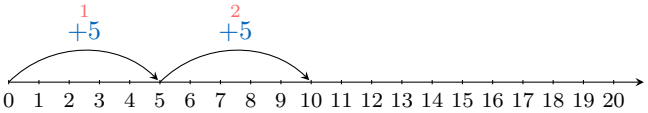
Ex 33:

$2 \times 5 = \boxed{10}$



Answer:

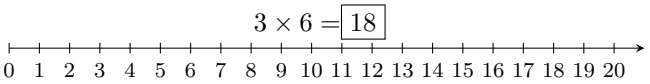
- Start from 0 and jump 5 steps to the right, 2 times.



- $2 \times 5 = 10$

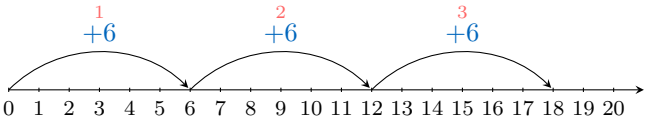
Ex 34:

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



Answer:

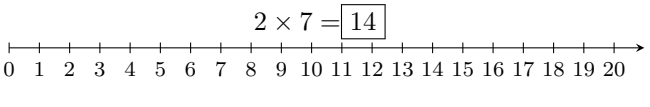
- Start from 0 and jump 6 steps to the right, 3 times.



- $3 \times 6 = 18$

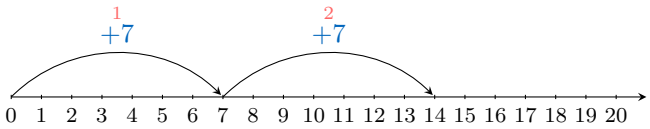
Ex 35:

$2 \times 7 = \boxed{14}$



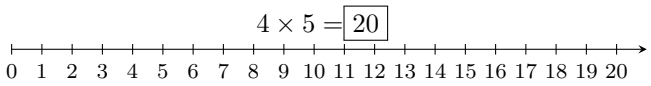
Answer:

- Start from 0 and jump 7 steps to the right, 2 times.



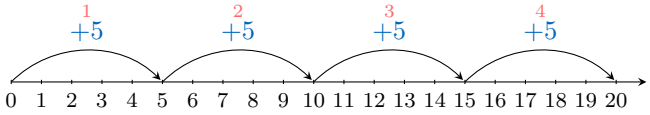
- $2 \times 7 = 14$

Ex 36:



Answer:

- Start from 0 and jump 5 steps to the right, 4 times.

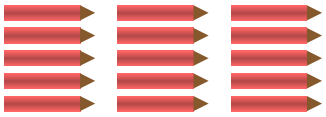


- $4 \times 5 = 20$

C REPRESENTATION OF MULTIPLICATION IN WORD PROBLEMS

C.1 SOLVING REAL-WORLD PROBLEMS WITH DRAWING

Ex 37: Hugo has three boxes of pencils. Each box has 5 pencils.

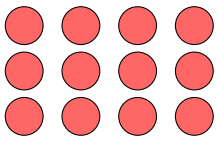


Hugo has $\boxed{15}$ pencils in total.

Answer:

- Hugo has 3 groups of 5 pencils.
- Adding groups: $5 + 5 + 5 = 15$ pencils.
- Hugo has 15 pencils in total.

Ex 38: Su has four boxes of marbles. Each box has 3 marbles.

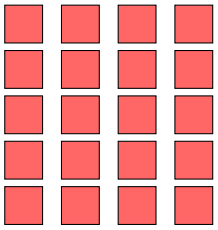


Su has $\boxed{12}$ marbles in total.

Answer:

- Su has 4 groups of 3 marbles.
- Adding groups: $3 + 3 + 3 + 3 = 12$ marbles.
- Su has 12 marbles in total.

Ex 39: Louis has four containers of Lego bricks. Each container has 5 Lego bricks.

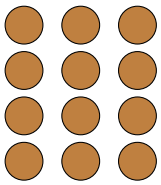


Louis has $\boxed{20}$ Lego bricks in total.

Answer:

- Louis has 4 groups of 5 Lego bricks.
- Adding groups: $5 + 5 + 5 + 5 = 20$ Lego bricks.
- Louis has 20 Lego bricks in total.

Ex 40: Alice has three jars of cookies. Each jar has 4 cookies.



Alice has $\boxed{12}$ cookies in total.

Answer:

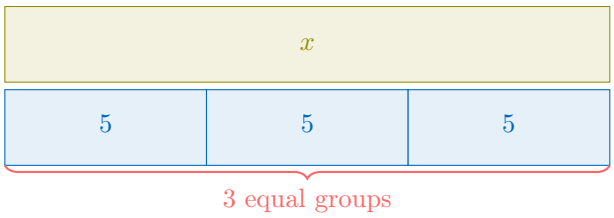
- Alice has 3 groups of 4 cookies.
- Adding groups: $4 + 4 + 4 = 12$ cookies.
- Alice has 12 cookies in total.

C.2 SOLVING REAL-WORLD PROBLEMS

Ex 41: Larbi is building toy cars for a school project. He can build 5 toy cars each day. If he works for 3 days, how many toy cars will he have in total?
Larbi will have $\boxed{15}$ toy cars.

Answer:

- Visualize the groups:

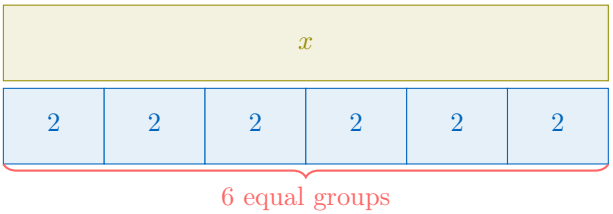


- Larbi has 3 groups of 5 toy cars.
- Calculation: $3 \times 5 = 15$
- Total: Larbi has 15 toy cars.

Ex 42: A school is buying notebooks for its students. Each student needs 2 notebooks. If there are 6 students, how many notebooks does the school need to buy?
The school needs to buy $\boxed{12}$ notebooks.

Answer:

- Visualize the groups:

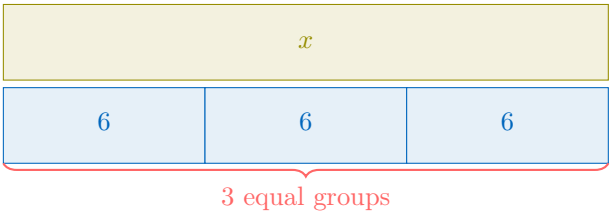


- There are 6 groups of 2 notebooks.
- Calculation: $6 \times 2 = 12$
- Total: The school needs to buy 12 notebooks.

Ex 43: Emma has 3 boxes of eggs. Each box contains 6 eggs. How many eggs does Emma have in total?
Emma has $\boxed{18}$ eggs.

Answer:

- Visualize the groups:

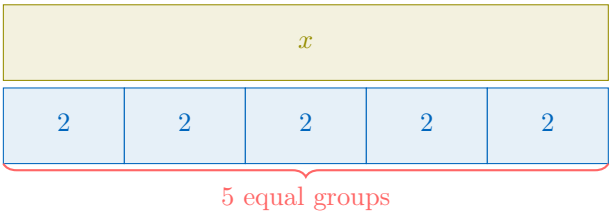


- Emma has 3 groups of 6 eggs.
- Calculation: $3 \times 6 = 18$
- Total: Emma has 18 eggs.

Ex 44: There are 5 people. Each person has 2 eyes. How many eyes are there in total?
There are $\boxed{10}$ eyes.

Answer:

- Visualize the groups:

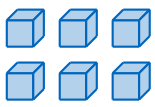


- Calculate the multiplication: $5 \times 2 = 10$
- There are 10 eyes in total.

D COMMUTATIVE

D.1 FINDING EXPRESSIONS FROM ARRAYS

MCQ 45: Which expressions represent the number of cubes?



Choose all correct answers:

☒ 2×3

☒ 3×2

☒ $2 + 2 + 2$

☒ $3 + 3$

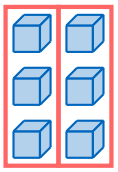
☒ 6

☐ $3 + 2$

☐ $3 - 2$

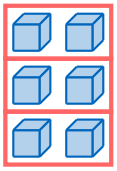
Answer:

- $3 + 3$



$= 2 \times 3.$

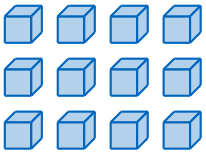
- $2 + 2 + 2$



$= 3 \times 2.$

- There are 6 cubes.

MCQ 46: Which expressions represent the number of cubes?



Choose all correct answers

☐ $4 + 3$

☐ $3 + 4$

☒ 4×3

☒ 3×4

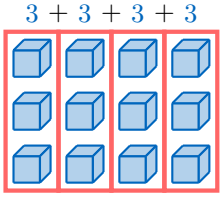
☒ $3 + 3 + 3 + 3$

☒ $4 + 4 + 4$

☒ 12

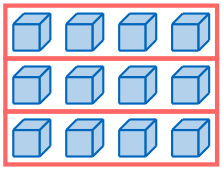
Answer:

- $3 + 3 + 3 + 3$



$= 4 \times 3.$

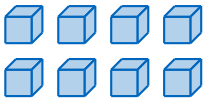
- $4 + 4 + 4$



$= 3 \times 4.$

- There are 12 cubes.

MCQ 47: Which expressions represent the number of cubes?



Choose all correct answers

☒ 4×2

☒ $2+2+2+2$

☒ 8

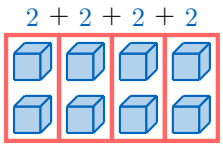
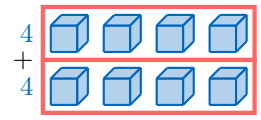
☐ $2+4$

☐ $4-2$

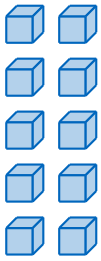
☒ 2×4

☒ $4+4$

Answer:

-  $= 4 \times 2$.
-  $= 2 \times 4$.
- There are 8 cubes.

MCQ 48: Which expressions represent the number of cubes?



Choose all correct answers

☒ 2×5

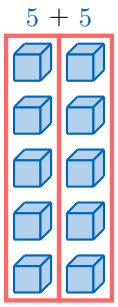
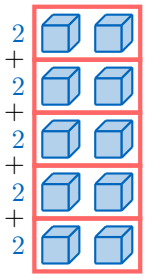
☒ 5×2

☒ $5+5$

☒ $2+2+2+2+2$

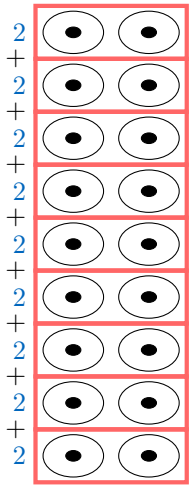
☒ 10

Answer:

-  $= 2 \times 5$.
-  $= 5 \times 2$.
- There are 10 cubes.

D.2 FINDING AN EASIER WAY TO CALCULATE MULTIPLICATION

MCQ 49: There are 9 people in a room. Each person has 2 eyes.
Tom calculated the total number of eyes by adding $2+2+2+2+2+2+2+2+2$.



Is there an easier way to find the total number of eyes? **Choose 1 answer**

☐ $2+9$

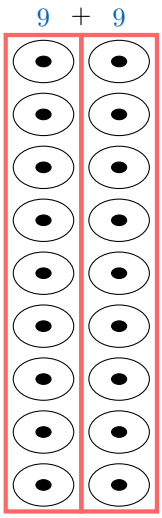
☐ 9×9

☒ $9+9$

☐ $1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1$

Answer:

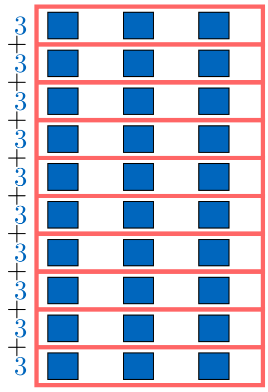
- We can represent 9 people each with 2 eyes as:



This equals $9+9$.

- So, the easiest way is to calculate $9+9=18$.

MCQ 50: In Marie's class, there are 10 students, and each student needs 3 notebooks.
Marie calculated 10×3 by adding $3+3+3+3+3+3+3+3+3+3$.

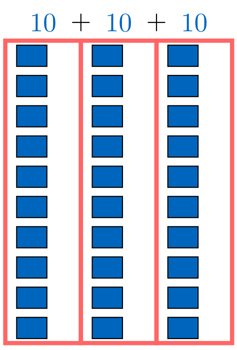


Is there an easier way to find the total number of notebooks? **Choose 1 answer**

- ☐ $3+10$
- ☐ 10×10
- ☐ $1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1$
- ☒ $10+10+10$

Answer:

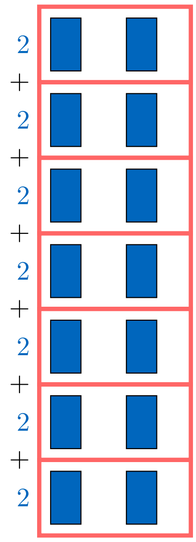
- We can represent 3 groups of 10 notebooks as:



This equals $10+10+10$.

- So, the easiest way is to calculate $10+10+10=30$.

MCQ 51: Louis's class has 7 rows of desks with 2 desks in each row.
Louis calculated 7×2 by adding $2+2+2+2+2+2+2$.
Is there an easier way to find the total number of desks?

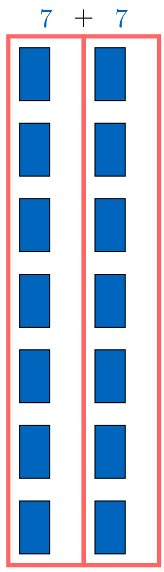


Choose 1 answer

- ☒ $7+7$
- ☐ $2+7$
- ☐ 7×7
- ☐ $1+1+1+1+1+1+1+1+1+1+1+1+1+1$

Answer:

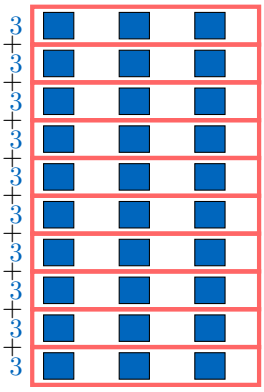
- We can represent 2 groups of 7 desks as:



This equals $7+7$.

- So, the easiest way is to calculate $7+7=14$.

MCQ 52: Su's garden has 10 rows of flower beds, with 3 flowers planted in each row.
Su calculated the total number of flowers by adding $3+3+3+3+3+3+3+3+3+3$.



Is there an easier way to find the total number of flowers? **Choose 1 answer**

☐ $3 + 10$

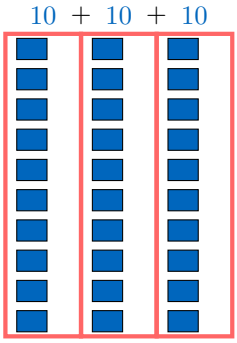
☐ 10×10

☐ $1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1$

☒ $10 + 10 + 10$

Answer:

- We can represent 3 groups of 10 flowers as:



  This equals $10 + 10 + 10$.

- So, the easiest way is to calculate $10 + 10 + 10 = 30$.

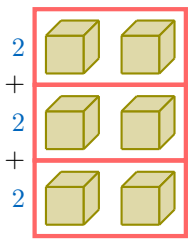
D.3 WRITING THE COMMUTATIVE PROPERTY

Ex 53:

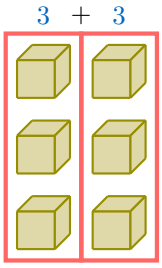
$$3 \times 2 = \boxed{2} \times 3$$

Answer:

- 3×2 is 3 groups of 2.



- 3×2 is also 2 groups of 3.



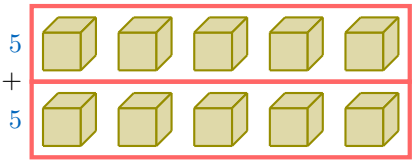
- $3 \times 2 = 2 \times 3$

Ex 54:

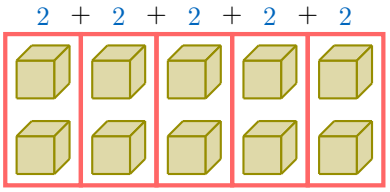
$$2 \times 5 = \boxed{5} \times 2$$

Answer:

- 2×5 is 2 groups of 5.



- 2×5 is also 5 groups of 2.



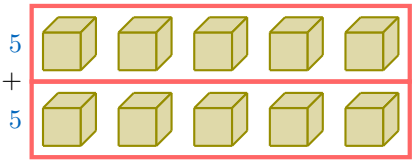
- $2 \times 5 = 5 \times 2$

Ex 55:

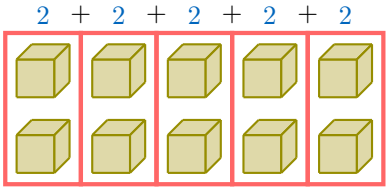
$$2 \times 5 = \boxed{5} \times 2$$

Answer:

- 2×5 is 2 groups of 5.



- 2×5 is also 5 groups of 2.

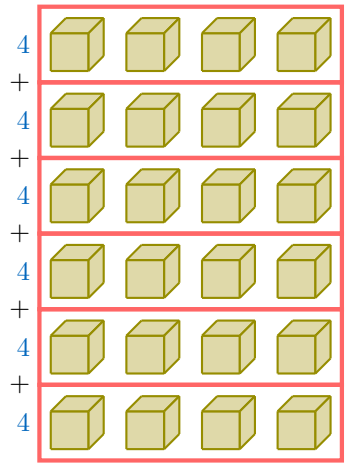


- $2 \times 5 = 5 \times 2$

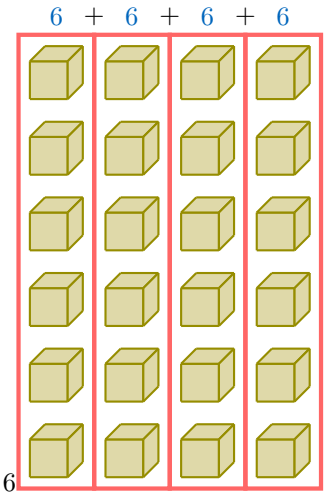
Ex 56:

$$6 \times 4 = \boxed{4} \times 6$$

Answer:



- 6×4 is 6 groups of 4.



- 6×4 is also 4 groups of 6
- $6 \times 4 = 4 \times 6$

D.4 PLAYING WITH THE ORDER OF MULTIPLICATION

Ex 57:

$$10 \times 2 = \boxed{20}$$

Answer:

- We can think of 10×2 as adding 10 two times:
- $10 \times 2 = 2 \times 10$
  $= 10 + 10$
  $= 20$
- So, $10 \times 2 = 20$

Ex 58:

$$10 \times 3 = \boxed{30}$$

Answer:

- We can think of 10×3 as adding 10 three times:
- $10 \times 3 = 3 \times 10$
  $= 10 + 10 + 10$
  $= 30$
- So, $10 \times 3 = 30$

Ex 59:

$$15 \times 2 = \boxed{30}$$

Answer:

- We can think of 15×2 as adding 15 two times:
- $15 \times 2 = 2 \times 15$
  $= 15 + 15$
  $= 30$
- So, $15 \times 2 = 30$

Ex 60:

$$100 \times 2 = \boxed{200}$$

Answer:

- We can think of 100×2 as adding 100 two times:
- $100 \times 2 = 2 \times 100$
  $= 100 + 100$
  $= 200$
- So, $100 \times 2 = 200$