



# Helping With Math

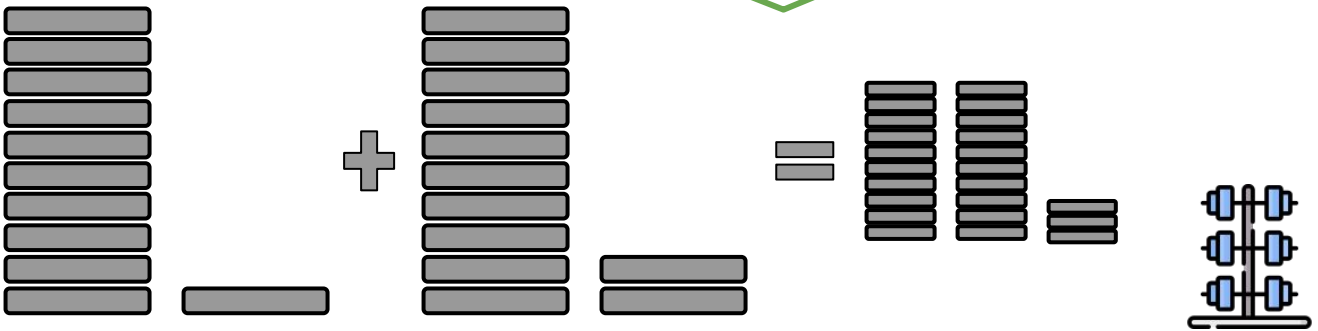
## Adding Numbers within 1000 Using the Base 10 Blocks

GRADE 3



In adding two or more numbers containing two to three digits, a concept known as **base ten blocks** may serve as a useful guide for students beginning to learn basic addition.

$$11 \text{ weight plates} + 12 \text{ weight plates} = 23 \text{ weight plates}$$



- **Addition** is a fundamental arithmetic operation that means “to put together”. The result when two or more numerical values are added together is called *sum*.
- **Base ten blocks**, also known as *multibase arithmetic blocks*, is a mathematical concept that aims to group numbers in tens.



## PLACE VALUE

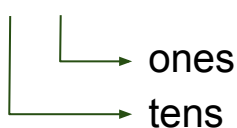
Before you get to use the base ten blocks, you should first be familiar with *place value*.



**Place value** is basically the value represented by each digit in a number. This is applicable to numbers containing two or more digits.

The place value of a digit is determined by its place. From the rightmost to the leftmost digit, the place value is named as *ones*, *tens*, *hundreds*, *thousands*, *ten thousands*, and so on. See the examples below for better understanding.

1 7

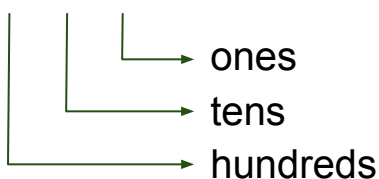


From right to left, the digits are:

- 7 placed in ones = 7
- 1 placed in tens = 10

17

5 2 8



From right to left, the digits are:

- 8 placed in ones = 8
- 2 placed in tens = 20
- 5 placed in hundreds = 500

528



Since we'll be dealing with base ten blocks, digits in hundreds place will be represented with 10 pieces of base ten blocks. This will be more elaborated on the following discussions.



## MAKING BASE TEN BLOCKS

In making the model of base ten numeration, we draw blocks. But, we cannot just draw blocks individually because it will be hard to count them one by one.



There are organized figures representing digits located in **tens** and **hundreds** and they are named as follows:

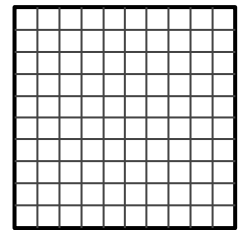
1. **Rod** - composed of ten copies of blocks piled up in a straight row. This is used to represent digits in the *tens* place value.

$$1 \text{ rod} = 10 \text{ blocks}$$



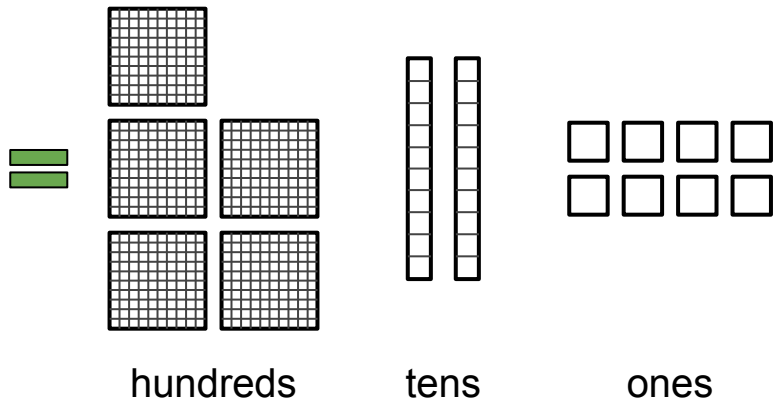
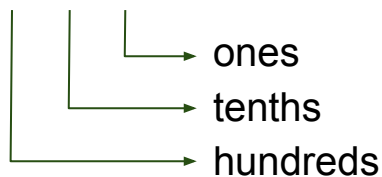
2. **Flat** - represents ten rods placed side to side forming a square with 10 by 10 tiles. This is used to represent digits in the *hundreds* place value.

$$1 \text{ flat} = 100 \text{ blocks}$$



### EXAMPLE:

**5 2 8**



Basically, the digits placed in ones, tens and hundreds are the indicators of the number of individual blocks, rods and flats, respectively, in order to illustrate a two- or three- digit number.



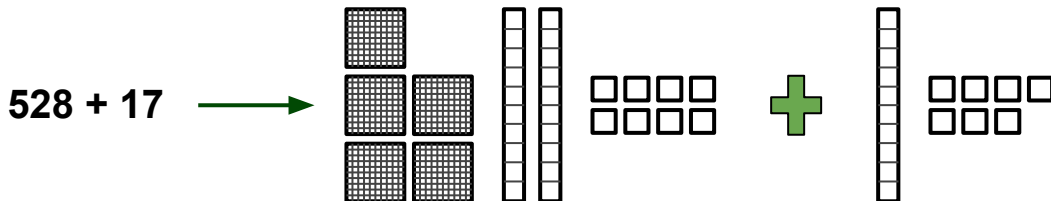
# ADDING NUMBERS USING BASE TEN BLOCKS

In order to add numbers using the base ten blocks, the following steps should be followed.

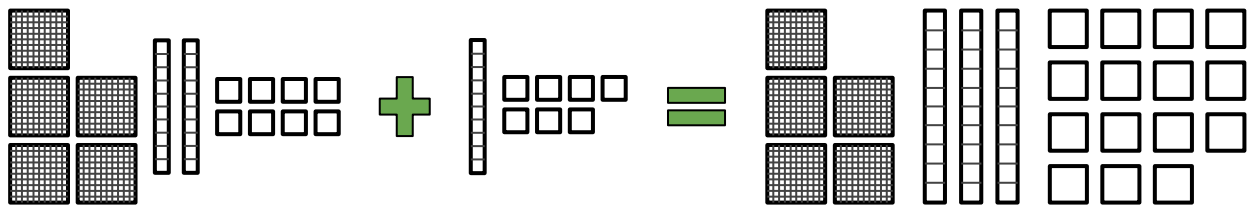


Try to add **17** and **528**.

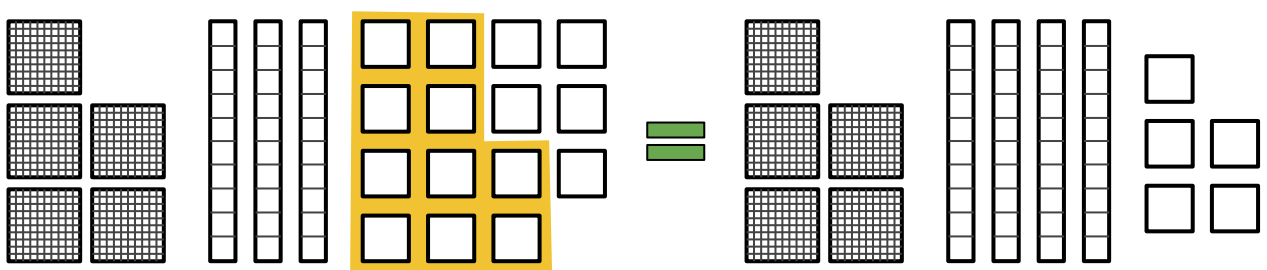
**STEP 1:** Illustrate the given numbers to be added as base ten blocks.



**STEP 2:** Count how many flats, rods and blocks were made when they were put together.



**STEP 3:** If the individual blocks in the sum is greater than or equal to 10, turn the 10 blocks into 1 rod. The same thing shall be done if the resulting rods is 10 or above: turn the 10 rods into 1 flat.



10 blocks = 1 rod

$$500 + 40 + 5$$

**545**



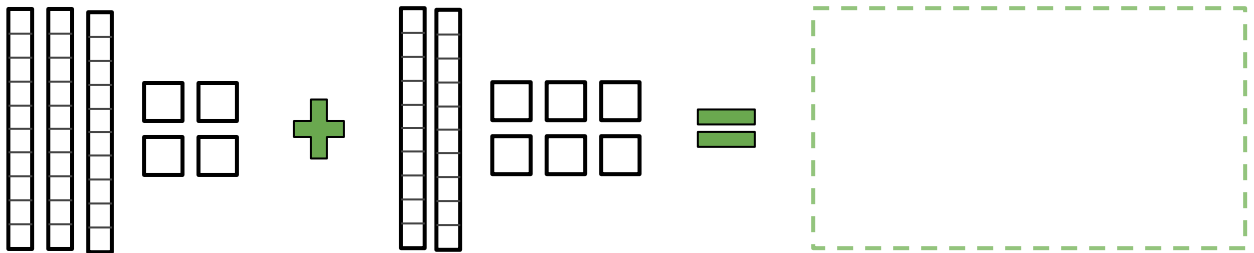
## SAMPLE/APPLICATION

Del made his own fitness program good for four months of workout. The table below shows some exercises and the number of days he did them.

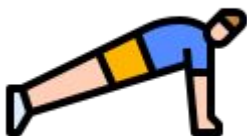
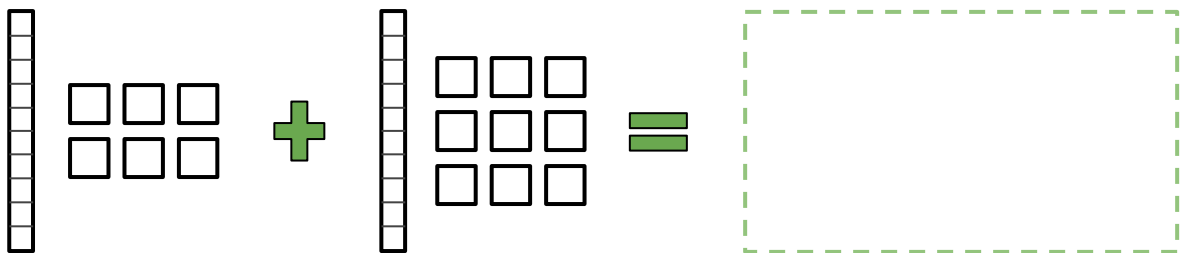


Exercises	No. of Days Done
biking	16
jogging	26
plank exercise	34
weight lifting	19

plank exercise + jogging = ?



biking + weight lifting = ?











# TABLE OF ACTIVITIES

1. Calorie Count
2. Heavy Weights
3. Block the Weight
4. Blocks of Pushes
5. Gym Fee
6. Base Ten Jumps
7. Hydrated Blocks
8. Height Increaser
9. Run It
10. Fit to the Cost



# CALORIE COUNT

Part of attaining fitness is being aware of the calories in the food you eat. Determine how many flats, rods and individual blocks should be used to represent the following amount of calories.

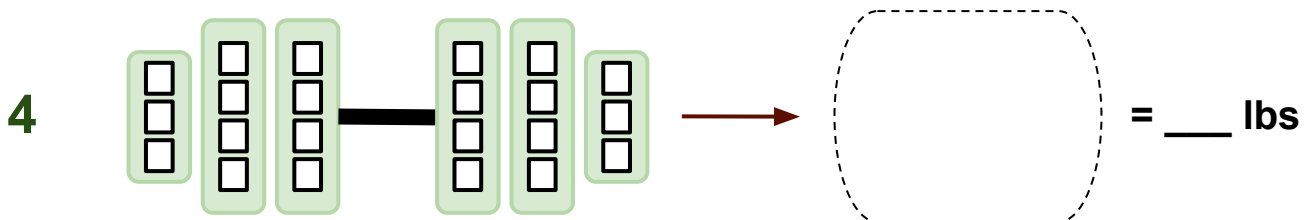
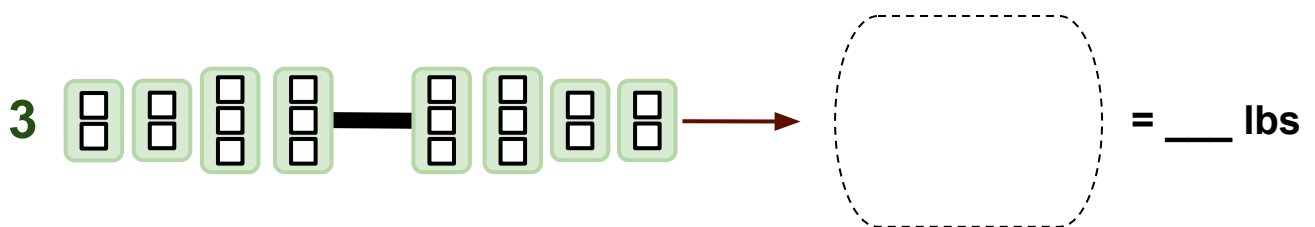
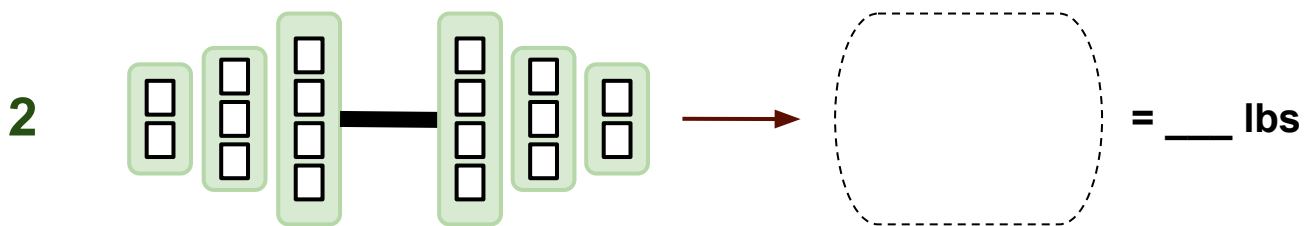
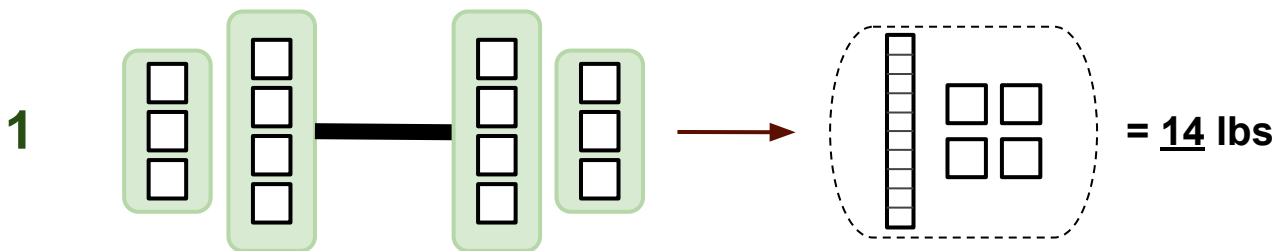
FOODS	CALORIE CONTENT (per cup)	BASE TEN ILLUSTRATION		
		FLAT	ROD	BLOCK
 frozen yogurt	220 calories	2	2	0
 grapes	114 calories			
 orange juice	112 calories			
 corn	178 calories			
 watermelon	50 calories			
 cereal	110 calories			
 white rice	223 calories			
 oatmeal	132 calories			



# HEAVY WEIGHTS

Time to do some weights! Solve the total weight of each dumbbell with each block representing 1 lb.

Let's find out how heavy the weights are!





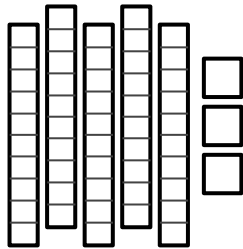
# BLOCK THE WEIGHT

Due to lack of exercise, some people gain weight. Compute for the weight of the family members after weight gain. Write your answer in numerical form.



Father

Previous Weight  
(in kilograms)

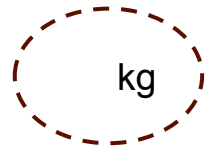


+

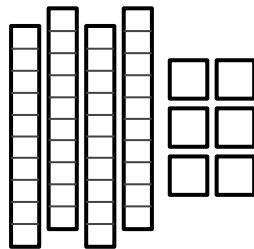
Gained Weight  
(in kilograms)



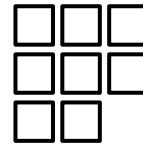
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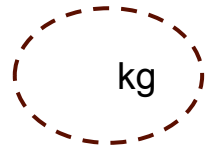
Mother



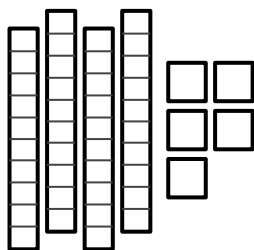
+



=



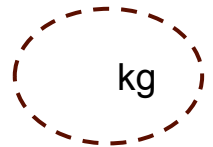
Brother



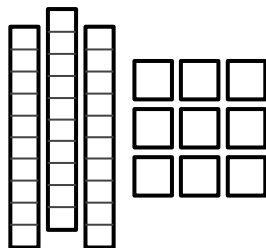
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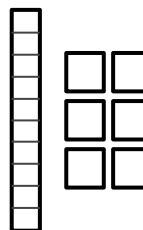
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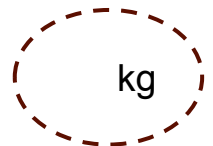
Sister



+














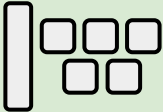









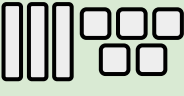
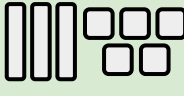

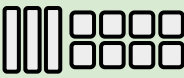
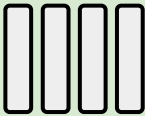




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# BLOCKS OF PUSHES

Push your limits! Below is a 30-day push up workout plan. Given the blocks representing the number of push ups, count the total push ups made in the whole plan.

## 30-DAY PUSH UP CHALLENGE

DAY 1 	DAY 2 	DAY 3 	DAY 4 	DAY 5 	DAY 6 
DAY 7 	DAY 8 	DAY 9 	DAY 10 	DAY 11 	DAY 12 
DAY 13 	DAY 14 	DAY 15 	DAY 16 	DAY 17 	DAY 18 
DAY 19 	DAY 20 	DAY 21 	DAY 22 	DAY 23 	DAY 24 
DAY 25 	DAY 26 	DAY 27 	DAY 28 	DAY 29 	DAY 30 

The total number of push ups made through the plan is \_\_\_\_\_.

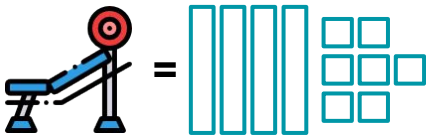


# GYM FEE

A gym set an amount to be paid for every service a customer wishes to be assisted with. Solve for the total amount of money needed to be paid by customers A, B and C.

Below are the list of assistance fees for different gym equipments illustrated as base ten blocks. (unit = \$)

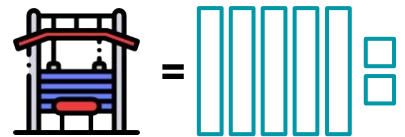
**Incline Bench Press**



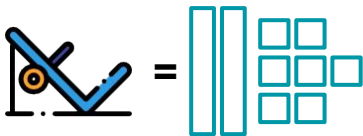
**Adjustable Bench**



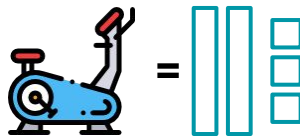
**Lat Pulldown Machine**



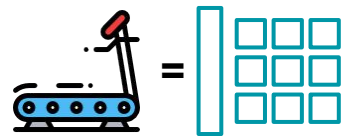
**Leg Press Machine**



**Stationary Bike**



**Treadmill**



Different customers want to avail different services. Fill the equation to solve for their total expenses below.

1. Customer A wants to avail assistance in using **adjustable bench** and **lat pulldown machine**.

$$\text{\$ } \underline{\quad} + \text{\$ } \underline{\quad} = \text{\$ } \underline{\quad}$$

2. Customer B wants to avail assistance in using the **stationary bike** and **incline bench press**.

$$\text{\$ } \underline{\quad} + \text{\$ } \underline{\quad} = \text{\$ } \underline{\quad}$$

3. Customer C wants to avail assistance in using the **treadmill**, **incline bench machine** and **leg press machine**.

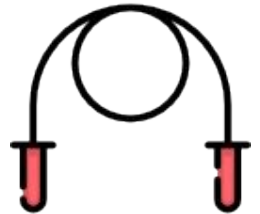
$$\text{\$ } \underline{\quad} + \text{\$ } \underline{\quad} + \text{\$ } \underline{\quad} = \text{\$ } \underline{\quad}$$



# BASE TEN JUMPS

Jumping rope is a great calorie-burner. Read the situation below and illustrate the computation for the total jump ropes done by each person using the base ten blocks.

John, Lloyd and Michael decided to have fun while working out and bet on getting the most jump ropes to be done.



(a) John was able to do **67 jump ropes** at first attempt and **21 jump ropes** at his second attempt.

$$\boxed{67} + \boxed{21} = \boxed{\quad}$$

(b) Lloyd was able to do **46 jump ropes** at first attempt and **36 jump ropes** at his second attempt.

$$\boxed{46} + \boxed{36} = \boxed{\quad}$$

(c) Michael was able to do **39 jump ropes** at first attempt and **74 jump ropes** at his second attempt.

$$\boxed{39} + \boxed{74} = \boxed{\quad}$$



# HYDRATED BLOCKS

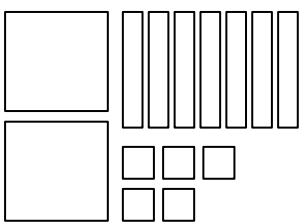


Hydration is the main key to fitness. Add the amount of water (in milliliters) to know the total amount of water taken.

Get the sum of the milliliters of water represented with blocks below.





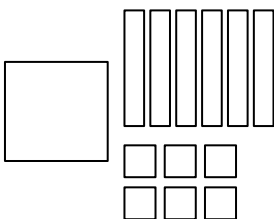

**1**

275 ml                      582 ml                      857 ml

 +  = 



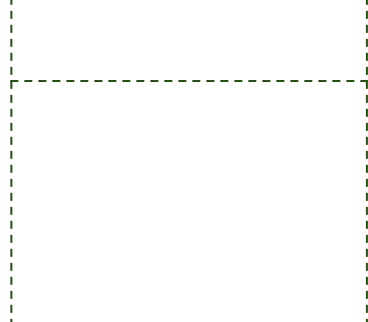
**2**

428 ml                                            594 ml

 +  = 

**3**

173 ml                      258 ml

 +  = 



# HEIGHT INCREASER

Jogging makes people grow taller. Using the base ten blocks, identify how many centimeters each jogger has increased in term of height.

Four people decided to jog regularly to hopefully increase their height. As the previous and current heights were given, solve for how much their heights increased.



Wenny: 150 cm → 156 cm

$$\begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} + \text{-----} = \begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array}$$



Chard: 156 cm → 160 cm

$$\begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} + \text{-----} = \begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array}$$



Marco: 148 cm → 154 cm

$$\begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} + \text{-----} = \begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array}$$



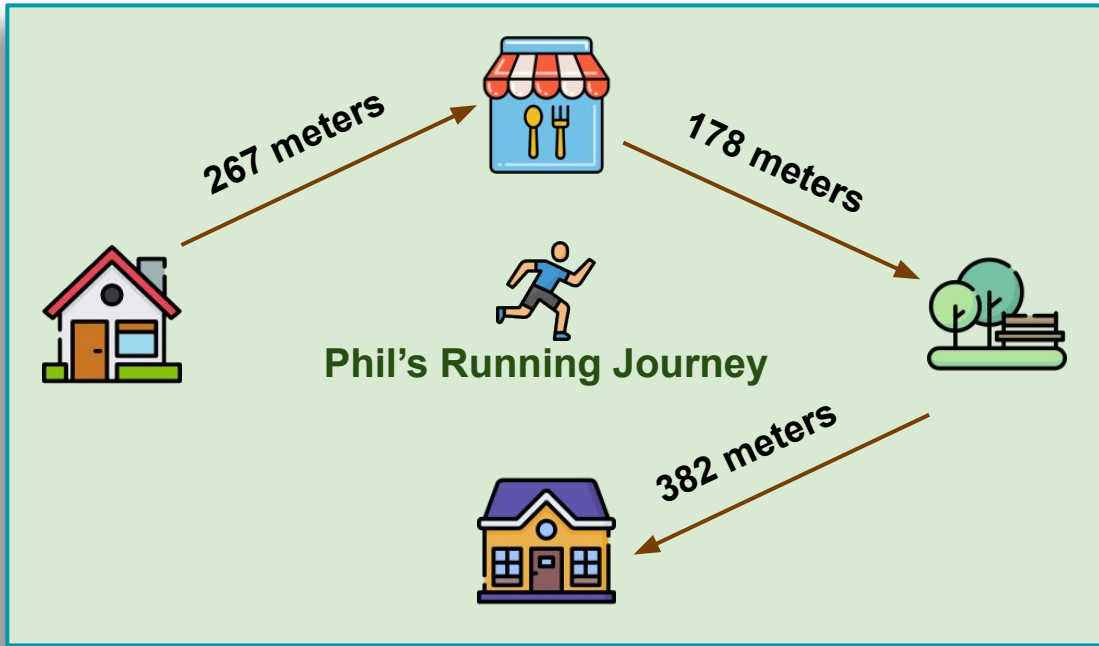
Jans: 149 cm → 164 cm

$$\begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} + \text{-----} = \begin{array}{|c|} \hline \square \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline | \\ \hline \end{array} \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array}$$

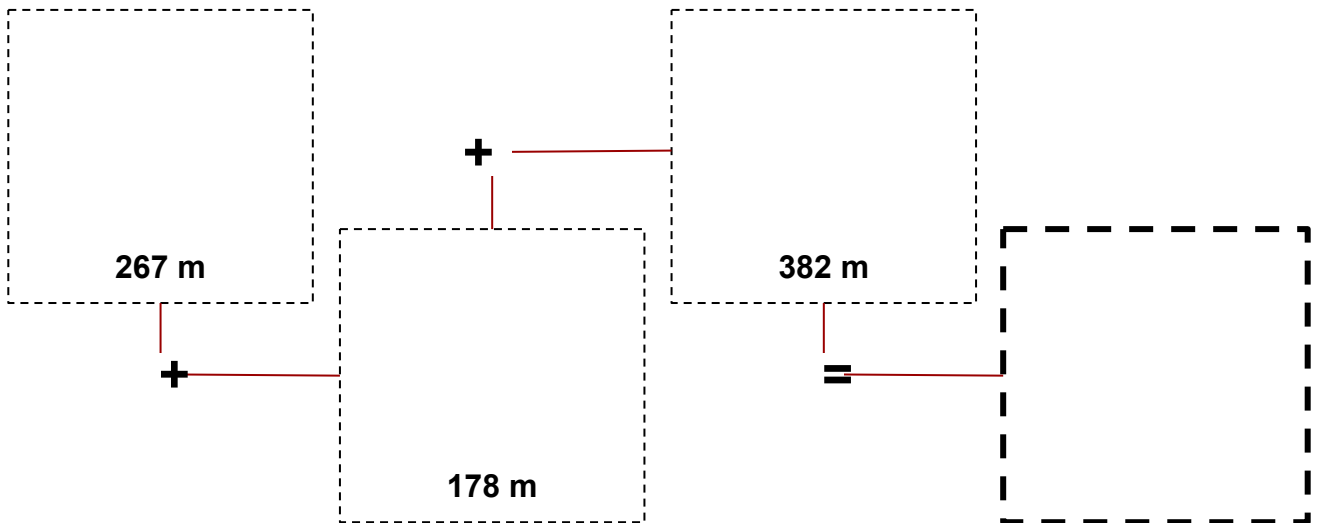


# RUN IT

Running is a good exercise. Instead of commuting, Phil decided to run to his destinations. Solve for the total distance he ran through.



Use the space below to illustrate solving using the base ten blocks.



# FIT TO THE COST

Let's see how much it cost Jin for his fitness. Add the prices of the gym equipment to know the total cost. Use the space provided to show how the base ten blocks are used to solve for the total.

Hi there! I am Jin. I am sort of dedicated to attaining fitness. So, I bought some gym equipments I think I'd need for my goal. Help me know how much I spent for them all.



**HAND GRIP**



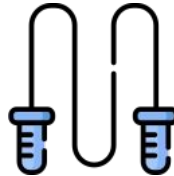
**Cost: \$1**

**GYM BALL**



**Cost: \$3**

**JUMP ROPE**



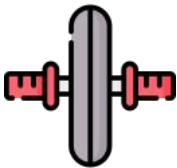
**Cost: \$27**

**TREADMILL**



**Cost: \$30**

**ROLLER WHEEL**



**Cost: \$30**

**GYM BALL**



**Cost: \$169**

A large dashed green rectangular box for working out the problem. At the bottom right of this box, there is a smaller solid white rectangular box labeled "ANSWER:".

**ANSWER:**





# ANSWER GUIDE

## Activity 1

Frozen Yogurt : **2** flat, **2** rod, **0** block

Grape fruit : **1** flat, **1** rod, **4** blocks

Orange juice : **1** flat, **1** rod, **2** blocks

Corn : **1** flat, **7** rods, **8** blocks

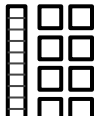
Watermelon : **0** flat, **5** rods, **0** block

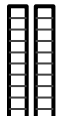
Cereal : **1** flat, **1** rod, **0** block

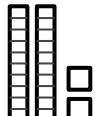
White rice : **2** flats, **2** rods, **3** blocks

Oatmeal : **1** flat, **3** rods, **2** blocks

## Activity 2

2.  = 18 lbs

3.  = 20 lbs

4.  = 22 lbs

## Activity 3

Father = 56 kg

Mother = 54 kg

Brother = 47 kg

Sister = 55 kg

## Activity 4

The total number of push ups made through the plan is **505**.

## Activity 5

1. Customer A :  $\$5 + \$52 = \$57$

2. Customer B :  $\$23 + \$47 = \$70$

3. Customer C :  $\$19 + \$47 + \$27 = \$93$



# ANSWER GUIDE

## Activity 6

a. John : = 88

b. Lloyd : = 82

c. Michael : = 113

## Activity 8

Wenny :

Marco :

Chard :

Jans :

## Activity 9

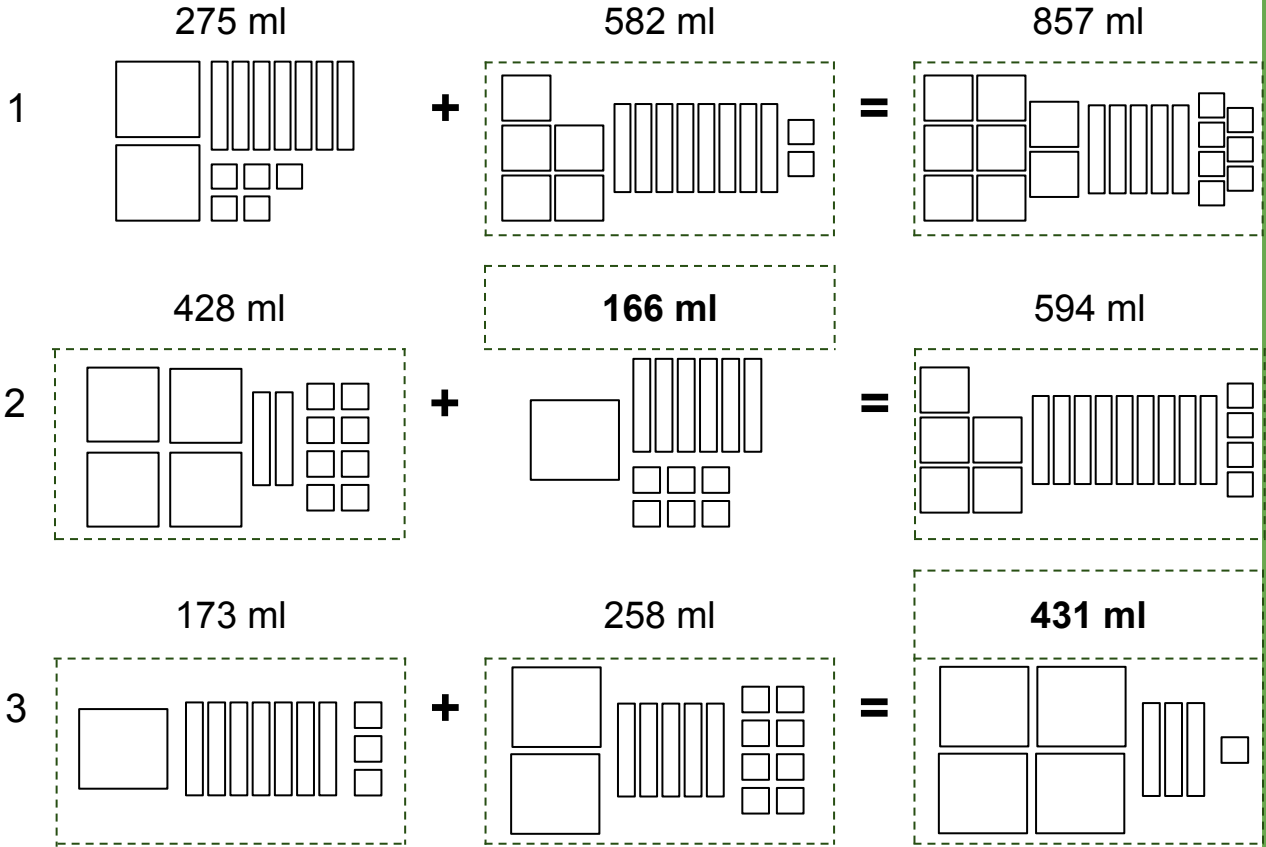
+ + =

267 m                      178 m                      382 m                      **827 m**



# ANSWER GUIDE

## Activity 7



## Activity 10



**TOTAL: \$260**



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