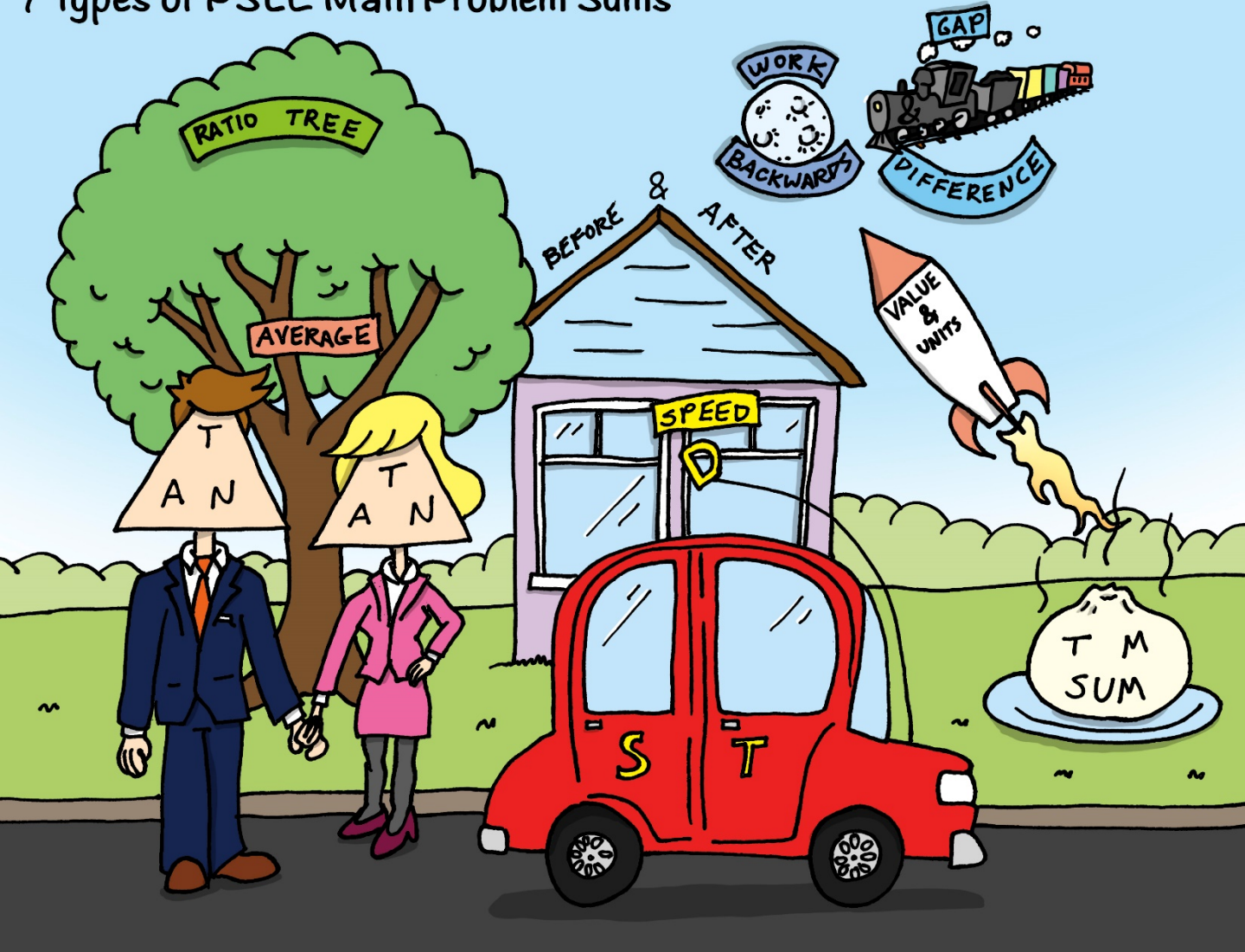


HOW TO SOLVE

7 types of PSLE Math Problem Sums



IN 7 DAYS

About the Author



Mr Teng is a PSLE Maths problem sum and Lower Secondary Science and Maths Trainer at Ace Scorers Enrichment Centre. He holds a BSc in Computational Mathematics from NUS.

His passion for creative ways to study led him to setup [Ace Scorers Enrichment Centre](#) and the programs he and his team developed has benefitted many Primary, Secondary and Junior College students, helping them to achieve success without too much stress.

One of his most notable achievement also includes being one of the 2 Singapore representatives to take part in the World Memory Championship in Guang Zhou, China in 2010 where he memorised 480 binary digits and performed other amazing memory feats.

Since 2008, he has been privately serving the needs of parents residing in Serangoon Gardens and Marine Parade, remaining the best kept secret for many parents in that area. In 2016, he was invited to speak at Oli PSLE Seminar organized by local radio station Oli 96.8FM to share his insights on how to score for PSLE Science and Math and what to do in the last 100 days leading to PSLE exam.

Mr Teng loves challenging assignments and is frequently requested to find alternative ways to help individual students to achieve a higher level of learning, understanding or remembering information to score in their exam.

He can be contacted directly at acescorers@gmail.com

Foreword by the Author



PSLE MATH

Mr Teng, B.Sc Math NUS

Learn how to identify 7 different types of problem sums and solve each of them in under 5 min.

Dear Parent/ Student,

I am sure by now, you should have noticed that this book is not like your regular Math assessment book. It does not have the usual hundreds of questions and solutions that you may expect of a Math book. This is because this book is for difficult problem sums only, i.e. those that cannot be solved with usual model drawing methods which I love. But do not be tricked by the lively pictures and easy content as each picture contains hidden information that you or your child can use for his or her difficult Math problem sums. I will explain in each chapter.

I know and understand your frustration as I have been teaching PSLE Math Problem Sums for the past 9 years. Personally, I am a very visual person. So solutions in the assessment books or schools sometimes offer no recourse as they may use complicated concepts taught at higher level; which are all abstract. Like most parents and students, I also struggle with the numerous acronyms, technical names and what not. Primary school life should not be so complicated.

Our team at Ace Scorers Enrichment Centre therefore designed this book, with the sole aim of making solutions simple to remember and understand. We do not guarantee that these 7 types of problem sums will solve all the questions you will encounter. There will never be a one size fit all solution for all problem sums. I believe that will take away the fun and excitement of solving math problem sums.

Also note that the information in this book is most useful for students trying to navigate the course of difficult problem sums. I will be blunt and say that it will not be useful for students who are still struggling to understand simple Mathematical concepts. I will suggest back to basic practices for the latter group.

As with all skills in life, just reading about the 7 types of solutions will not make you better. Nothing beats practice. Don't give up. Keep trying.

Hopefully you will be able to enjoy the process of solving Math Problem Sums as I do. Thank you!

PSLE Math Problem Solving Testimonials

- I have learnt the different methods and techniques to overcome the questions and also to identify what type of question it is. The teachers are really friendly and approachable. The courses are really helpful as I get to learn how to answer the different types of questions and it also exposed me to many questions so that I would be able to know how to do the question when it comes out in PSLE. - **Li Xuan – Xing Hua Primary**
- I benefited from knowing how to solve the difficult methods to do difficult questions. The teacher is a kind teacher whom can help me with my work if I dont know how to solve the question. **Jackey Xuan – Zhong Hua Primary School**
- I have benefited and learnt much from Ace Scorers such as learning new techniques to solve problem sums. Overall I think Ace Scorers is a good tuition centre and'the teacher is humorous. **Thaddeus Lim – Catholic High School**
- I learnt different methods and strategies to solve the questions. The teachers are very kind and I can ask them for help when I am in doubt. The lessons help me improve my Math. **Katrina – PLMGPS**

Bryan was Top 3 PSLE Scorer of his Primary School and subsequently a student in a top institution in Singapore. Apart from doing problem sums, like what most of his peers did, he also focused on 7 types of questions. While most students would be spending hundreds of hours just blindly doing PSLE problem sums from "all over the Universe" Bryan also focused on recognizing the 7 types of questions.

And these 7 types of questions helped him to solve hundreds of other questions.

These hundreds of questions helped him to get A Star for his PSLE math.

All By Solving 7

When solving $7 = A^*$

Recognizing that solutions to difficult PSLE Math problem sums generally fall under 7 categories, Bryan practised hard to **identify** and **remember** the solutions to these 7 types of questions. After all, it is very difficult for question setters to deviate from these patterns. The most they can do is to change the variables or try to complicate the questions by mixing different solutions together.

As a result of reduced workload, Bryan had more energy to study other subjects because he does not waste "brain power" trying to solve numerous "unsovable" math questions repeatedly. And because he is less stressed, he can understand better what his Teachers are teaching in School, enabling him to absorb more than his stressed out peers. He is relaxed throughout the year because he is able to enjoy time with his family, his friends and occasionally play some computer games after school or during weekends.

A relaxed mental state further enhanced Bryan's ability to solve complex maths questions that his friends could not. It also removed most of his careless mistakes as he is more focused. This greatly boosted his confidence in the subject. Because it is now so easy, Bryan was always on the look out for more math questions to brush up his skill in problem solving.

"If I had not invested the time to learn how to identify and remember the solutions to the 7 categories of Math problem sum questions. I would be wasting both my time and brain cells trying to solve questions which I simply have **NO** idea how to solve. I mean, **how do you do something that you do not know how to do?"** Bryan says. He imagined the helplessness his friends felt.

Bryan was committed to learning the 7 types of questions. Using this simple strategy, Bryan achieved his A* for PSLE math and thereafter his aim of getting into a prestigious Secondary School.

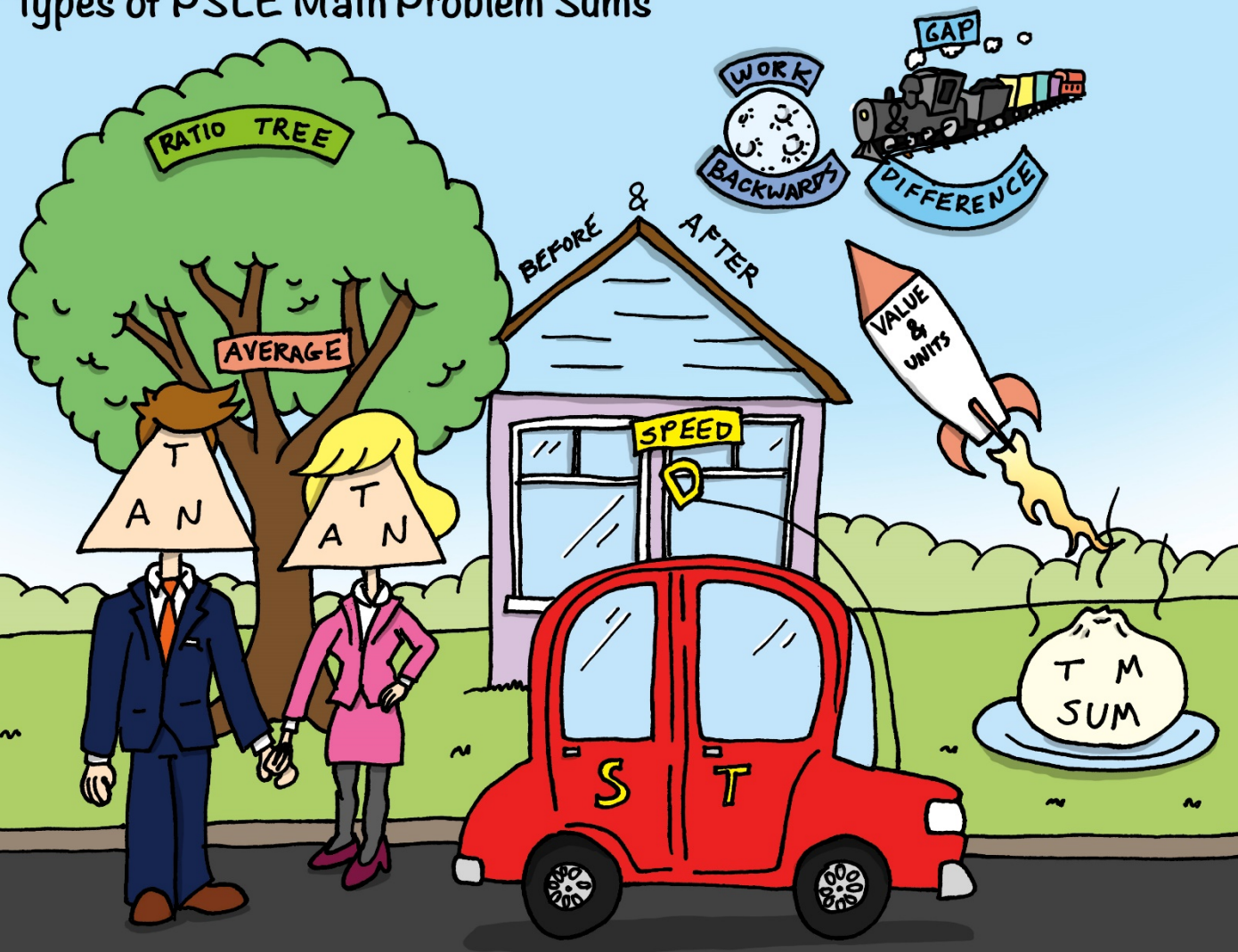
YOU CAN ACHIEVE SIMILAR SUCCESS AND WE WILL SHOW YOU HOW

The rest of this E-book contains specific examples of the 7 types of questions for problem sums. We are assuming that the reader is proficient with the topics from the normal syllabus such as fraction, percentage, ratio, geometry, circles etc.

THE 7 TYPES OF QUESTIONS

1. Gap and Difference
2. Before and After
3. Ratio Tree
4. Averages
5. Speed
6. Value and Units
7. Work Backwards

7 types of PSLE Math Problem Sums



GAP AND DIFFERENCE

Gap and difference questions usually need you to close the gap and find the difference.

The solution is to close the gap by finding the lowest common multiple and multiply the whole group with the common factor.

(Gaps present)

<u>Apples</u>	<u>Oranges</u>	<u>Total</u>
5	3	\$2.70
2	4	\$2.20

GAP!

(Gap closed)

<u>Apples</u>	<u>Oranges</u>	<u>Total</u>
10	6	\$5.40
10	20	\$11.00

DIFFERENCE!

Another rule is to always take the bigger number and minus the smaller number.

GAP AND DIFFERENCE

Question

5 apples and 3 oranges cost \$2.70. 2 apples and 4 oranges cost \$2.20. How much does a dozen apples cost?

Solution

<u>Apples</u>	<u>Oranges</u>	<u>Total</u>
5	3	\$2.70
2	4	\$2.20

Close the gap.

<u>Apples</u>	<u>Oranges</u>	<u>Total</u>
10	6	\$5.40
10	20	\$11.00

Compare the difference.

$$\$11.00 - \$5.40 = \$5.60 \rightarrow 14 \text{ oranges}$$

$$1 \text{ orange} \rightarrow \$0.40$$

$$4 \text{ oranges} \rightarrow \$1.60$$

$$2 \text{ apples} \rightarrow \$2.20 - \$1.60 = \$0.80$$

$$12 \text{ apples} \rightarrow \$0.80 \times 6 = \$4.80 \text{ (Ans)}$$

GAP AND DIFFERENCE

Question

A pair of pants cost \$12 more than a shirt. Mrs Tan paid \$204 for 3 pairs of pants and 4 shirts. How much did each shirt cost?

Solution

<u>Pants</u>	<u>Shirt</u>	<u>Total</u>
3	4	\$204
1	-1	\$12

Close the gap.

<u>Pants</u>	<u>Shirt</u>	<u>Total</u>
3	4	\$204
3	-3	\$36

Compare the difference.

$$4 - (-3) = 7$$

$$7 \text{ shirts} \rightarrow \$168$$

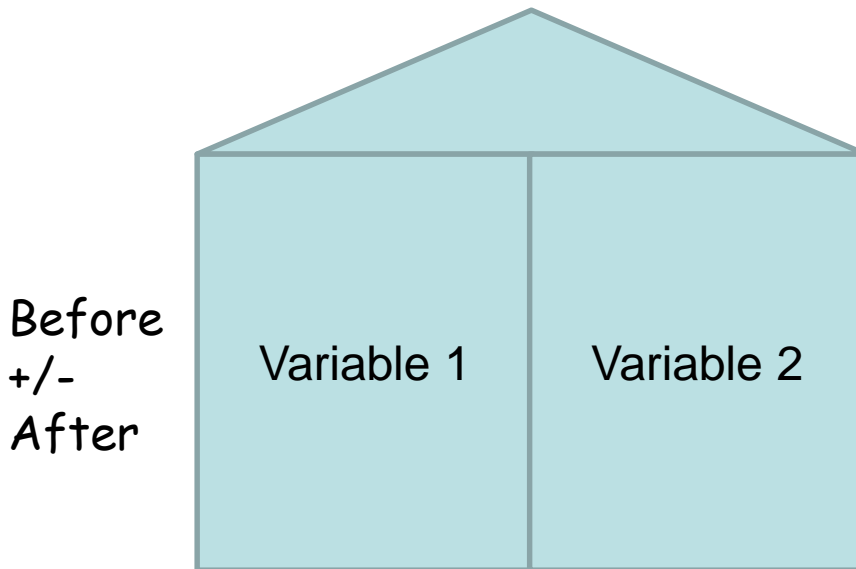
$$1 \text{ shirt} \rightarrow \$24 \text{ (Ans)}$$

BEFORE AND AFTER

	Girls	Boys	Girls	Boys
Before	1u	4u	3x	12x
+/-	-8			-8
After	1p	6p	2x	12x

The solution for before and after questions resembles that of a house with 2 big windows. The idea is to fill in as much information as possible and try to find the missing information by making the unchanged variable the same.

BEFORE AND AFTER



The solution for before and after questions resembles that of a house with 2 big windows

There are 5 types of Before and After Questions

1. Single Unchanged
2. Total Unchanged
3. Difference Unchanged
4. Everything Change
5. 2 Scenarios

BEFORE AND AFTER

Single Unchanged

Question

1/5 of the students at Ace Scorers tuition centre were girls and the rest were boys. When 8 girls left the centre, the fraction of girls decreased to 1/7 of the total number of students at the centre. How many students were at the tuition centre at first?

Solution

Which variable did not change? Number of Boys

	<u>Girls</u>	<u>Boys</u>		<u>Girls</u>	<u>Boys</u>
Before	1u	4u		3x	12x
+/-	-8			-8	
After	1p	6p		2x	12x

$$1x \longrightarrow 8$$

$$15x \longrightarrow 8 \times 15 = 120$$

Ans: 120

Question

There is a box full of pens and erasers. Pamela put in an additional 80 pens into the box and the percentage of pens increased from 10% to 30%. How many more erasers than pens were there in the box at the end?

Solution

Which variable did not change? Erasers

	<u>Pens</u>	<u>Erasers</u>		<u>Pens</u>	<u>Erasers</u>
Before	1u	9u		7x	63x
+/-	+80			+80	
After	3p	7p		27x	63x

$$20x \longrightarrow 80$$

$$1x \longrightarrow 4$$

$$36x \longrightarrow 144$$

There were 144 more erasers than pens at the end.

Question

There was a total of 440 men and women in a park. 25% of them were women. When some men left the park, the percentage of women in the park increased to 55%. How many men were left in the park?

Solution

Which variable did not change? Women

	<u>Women</u>	<u>Men</u>		<u>Women</u>	<u>Men</u>
Before	110u	330u		110x	330x
+/-	-?				
After	55p	45p		110x	90x

$$(25/100) \times 440 = 110$$

There were 110 women at first. Therefore the number of men is 330.

$$1x \longrightarrow 1 \text{ person}$$

90 men were left at the park

BEFORE AND AFTER

2. Total Unchanged

Question

Chelsea is reading a book. The number of pages she has read to the number of pages she has not read is 1:5. If she reads another 150 pages, the number of pages she has read will become half of the number of pages she has not read. How many pages are there in the book?

Solution

Which variable did not change? Total number of pages. No. of Pages of the book does not change.

	<u>Read</u>	<u>Unread</u>	<u>Total</u>	<u>Read</u>	<u>Unread</u>	<u>Total</u>
Before	1u	5u	6u	1x	5x	6x
+/-	+150	-150		+150	-150	
After	1p	2p	3p	2x	4x	6x

$$1x \longrightarrow 150$$

$$6x \longrightarrow 900$$

There are 900 pages in the book.

Question

Roy's saving was $\frac{1}{3}$ the amount Cassie had in her saving. Cassie then transferred \$600 from her savings to Roy's savings. As a result, Roy's saving is now 0.5 times Cassie's saving. What was the total amount of saving Roy and Cassie had?

Solution

Which variable did not change? Total amount of money. Because Cassie transferred to Roy.

	<u>Roy</u>	<u>Cassie</u>	<u>Total</u>		<u>Roy</u>	<u>Cassie</u>	<u>Total</u>
Before	1u	3u	4u		3x	9x	12x
+/-	+600	-600			+600	-600	
After	1p	2p	3p		4x	8x	12x

$$1x \longrightarrow 600$$

$$12x \longrightarrow 7200$$

Both Roy and Cassie had \$7200.

Question

In Jurong Bird Park, the ratio of number of pigeons to sparrows is 8:10. One year later, the number of sparrows increased by 20% and some pigeons flew away. Given that the total number of pigeons and sparrows remains the same, find the percentage of the pigeons that flew away.

Solution

Which variable did not change? Total number of birds. Mentioned in the question.

	<u>Pigeon</u>	<u>Sparrow</u>	<u>Total</u>
Before	8u	10u	18u
+/-	-?	+20%	
After	6u	12u	18u

$$(20/100) \times 10 = 2$$

Total number of units of sparrows after the 20% increase is 12 units.

$$18 - 12 = 6$$

Number of units of pigeons left after some flew away is 6 units.

Therefore 2 units of pigeon flew away.

$$(2/8) \times 100 = 25\%$$

The percentage of pigeons that flew away is 25%.

BEFORE AND AFTER

Difference Unchanged

Question

Mr Teng and Ms Joyce shared a sum of money in the ratio 2:3. After each of them spent \$12 to buy chocolates, the ratio becomes 3:5. Find the amount of money each of them had at first.

Solution

Which variable did not change? The difference.

	<u>Teng</u>	<u>Joyce</u>	<u>Difference</u>		<u>Teng</u>	<u>Joyce</u>	<u>Difference</u>
Before	2u	3u	1u		4x	6x	2x
+/-	-12	-12			-12	-12	
After	3p	5p	2p		3x	5x	2x

$$1x \longrightarrow 12$$

$$4x \longrightarrow 48$$

$$6x \longrightarrow 72$$

Mr Teng had \$48 and Ms Joyce had \$72.

Question

Mr Tan is 36 years older than his nephew Shaun. His age will be 3 times his nephew's in 6 years' time. How old is Mr Tan now?

Solution

Which variable did not change? Difference between their ages

	<u>Tan</u>	<u>Shaun</u>	<u>Difference</u>		<u>Tan</u>	<u>Shaun</u>	<u>Difference</u>
Before	?	?	36		48	12	36
+/-	+6	+6			+6	+6	
After	3p	1p	2p		54	18	36

Mr Tan is 48 years old now

BEFORE AND AFTER

4. Everything Change

Question

In the class room, some paperclips fell onto the floor. There were $\frac{2}{3}$ as many paperclips on the table as on the floor. After 8 paperclips were added onto the table and 5 paper clips were removed from the floor, there were $\frac{4}{5}$ as many paper clips on the table as on the floor. Find the number of paperclips on the floor in the end.

Solution

Which variable did not change? Both changed! Flip the house!

	<u>Before</u>	<u>+/-</u>	<u>After</u>
Table	2u	+8	4p
Floor	3u	-5	5p

	<u>Before</u>	<u>+/-</u>	<u>After (Working)</u>
Table	6u	+24	12p
Floor	6u	-10	10p

Take the bigger value and subtract the smaller value

$$12p - 10p = 2p$$

$$24 - (-10) = 34$$

$$2p \rightarrow 34$$

$$1p \rightarrow 17$$

$$5p \rightarrow 85$$

There are 85 paperclips on the floor at the end.

Question

The ratio of Ron's to Jim's allowance was 3 : 2. After Ron received extra \$15 and Jim spent \$8, the ratio of Ron's allowance to Jim's allowance was 3 : 1. How much allowance did Ron have at first?

Solution

Which variable did not change? Both changed! Flip the house!

	<u>Before</u>	<u>+/-</u>	<u>After</u>
Ron	3u	+15	3p
Jim	2u	-8	1p

	<u>Before</u>	<u>+/-</u>	<u>After (Working)</u>
Ron	6u	+30	6p
Jim	6u	-24	3p

Take the bigger value and subtract the smaller value

$$6p - 3p = 1p$$

$$30 - (-24) = 54$$

$$3p \rightarrow 54$$

$$1p \rightarrow 18$$

$$3p \rightarrow 54$$

$$54 - 15 = 39$$

Ron had \$39 at first.

Question

There are 4 times as many pigeons as sparrows. 415 pigeons and 46 sparrows flew away. As a result, the number of pigeons is 3 times as many as sparrows. How many sparrows were there at the end?

Solution

Which variable did not change? Both changed! Flip the house!

	<u>Before</u>	<u>+/-</u>	<u>After</u>
Pigeon	4u	-415	3p
Sparrow	1u	-46	1p

	<u>Before</u>	<u>+/-</u>	<u>After (Working)</u>
Pigeon	4u	-415	3p
Sparrow	4u	-184	4p

Take the bigger value and subtract the smaller value

$$4p - 3p = 1p$$

$$-184 - (-415) = 231$$

$$1p \rightarrow 231$$

There are 231 sparrows at the end.

BEFORE AND AFTER

5. 2 Scenarios

Question

There are some red and blue stickers in a box. If 36 red stickers were removed, the ratio of the number of red stickers to that of the blue stickers would be 1:2. If 90 blue stickers were removed instead, the ratio would become 5:1. How many red stickers are there in the box ?

Solution

Which variable did not change? Both changed! And there are 2 scenarios.

	scenario 1		scenario 2	
	<u>Red</u>	<u>Blue</u>	<u>Red</u>	<u>Blue</u>
Before	$1u+36$	$2u$	$5p$	$1p+90$
+/-	-36			-90
After	$1u$	$2u$	$5p$	$1p$

Comparing before for 2 scenarios

$$\text{Red} = 1u+36 = 5p$$

$$\text{Blue} = 2u = 1p+90$$

This implies

$$2 \text{ Red} = 2u+72 = 10p$$

$$1p+90 +72 = 10p$$

$$9p = 162$$

$$1p = 18$$

$$5p = 90 \text{ (Ans)}$$

BEFORE AND AFTER

2 Scenarios

Question

If Roland and Simon spent \$40 and \$20 each day respectively, Roland would still have \$400 when Simon spent all his money. If Roland and Simon spent \$20 and \$40 each day respectively, Roland would still have \$640 when Simon had spent all his money. How much money was given to each of them?

Solution

Which variable did not change? Both changed! And there are 2 scenarios.

	scenario 1		scenario 2	
	<u>Roland</u>	<u>Simon</u>	<u>Roland</u>	<u>Simon</u>
Before	$400+2u$	$1u$	$640+1p$	$2p$
+/-	$-2u$	$-1u$	$-1p$	$-2p$
After	400	0	640	0

Comparing before for 2 scenarios

$$\text{Roland} = 400+2u = 640+1p$$

$$\text{Simon} = 1u = 2p$$

This implies

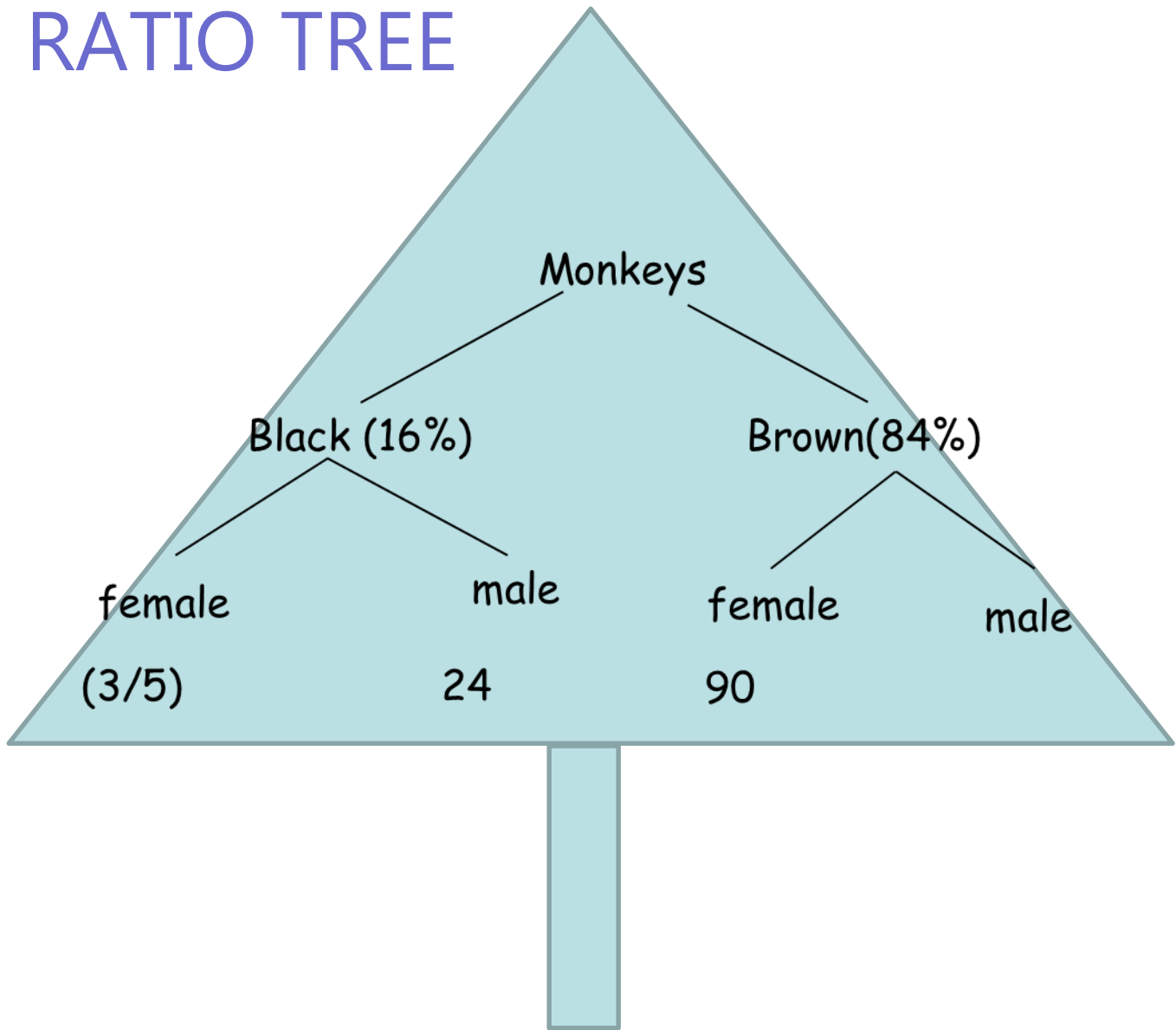
$$400+4p = 640=1p$$

$$3p \rightarrow 240$$

$$\text{Simon had } 2p \rightarrow \$160 \text{ (Ans)}$$

$$\text{Roland had } 640+80 = \$720 \text{ (Ans)}$$

RATIO TREE



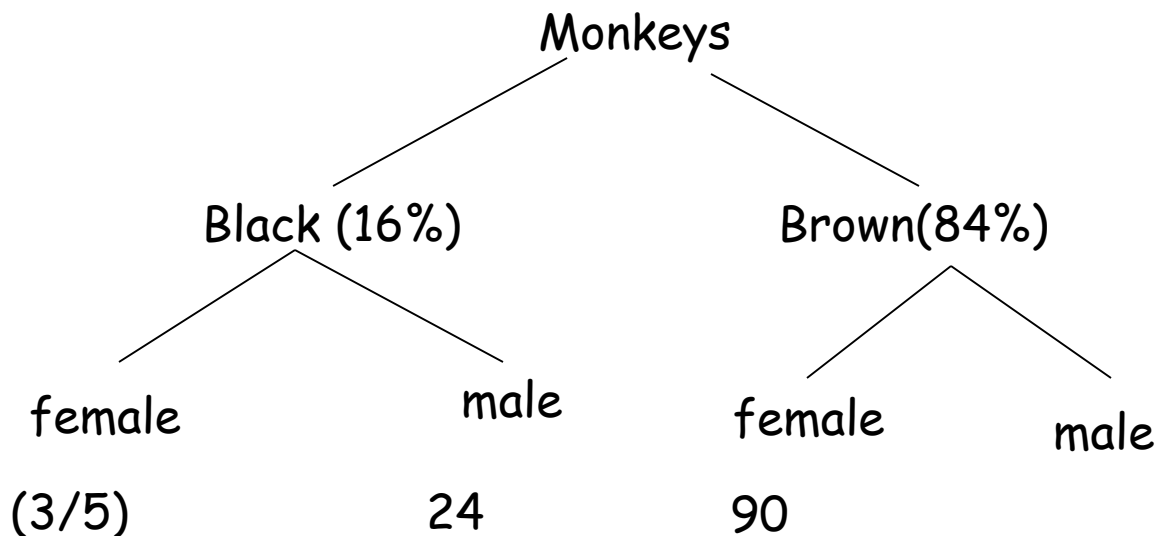
The solution for some ratio questions resembles that of a tree. The idea is to fill in as much information as possible and try to find the missing information.

RATIO TREE

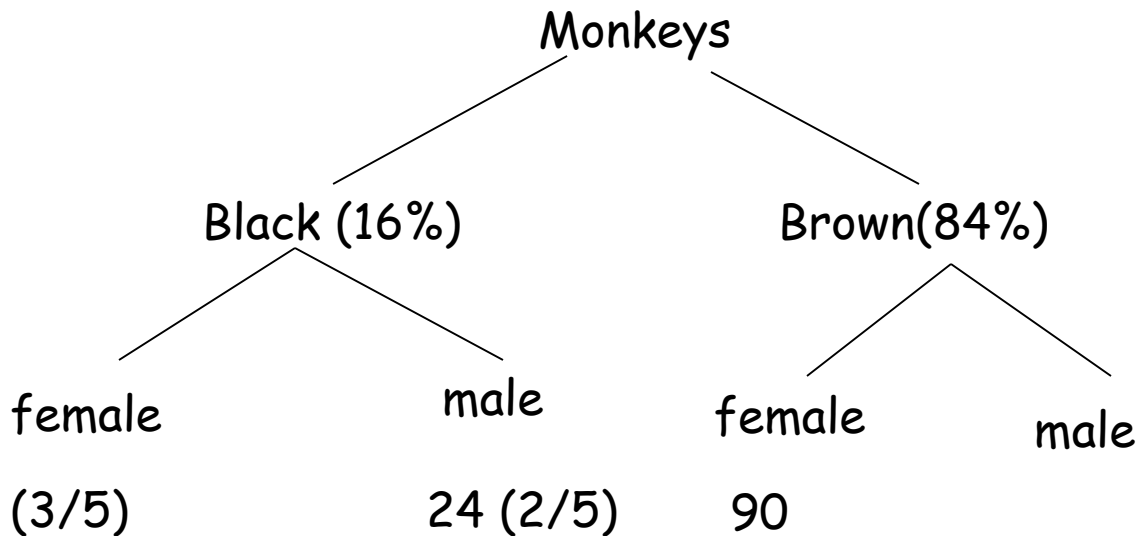
Question

16% of the monkeys in a forest were black in colour. 24 of the black monkeys were male. The remaining $\frac{3}{5}$ of the black monkeys were female. 90 female were brown. What percentage of the total number of monkeys were male who were brown in colour?

Solution



RATIO TREE



$2/5 \rightarrow 24$ monkeys

$1/5 \rightarrow 12$

$5/5 \rightarrow 12 \times 5 = 60 \rightarrow$ Number of black monkeys

$16\% \rightarrow 60$ monkeys

$1\% \rightarrow 3.75$ monkeys

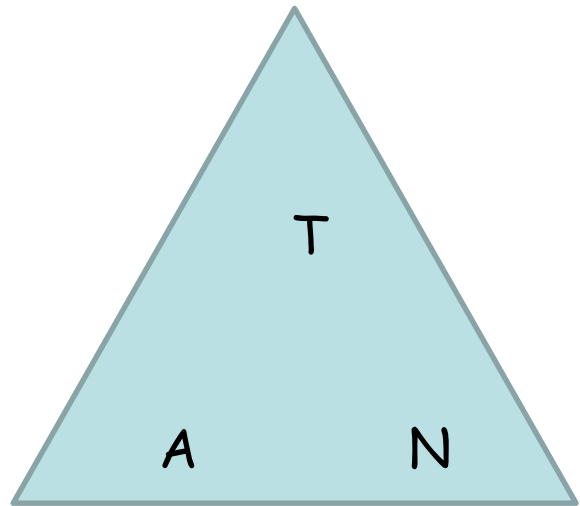
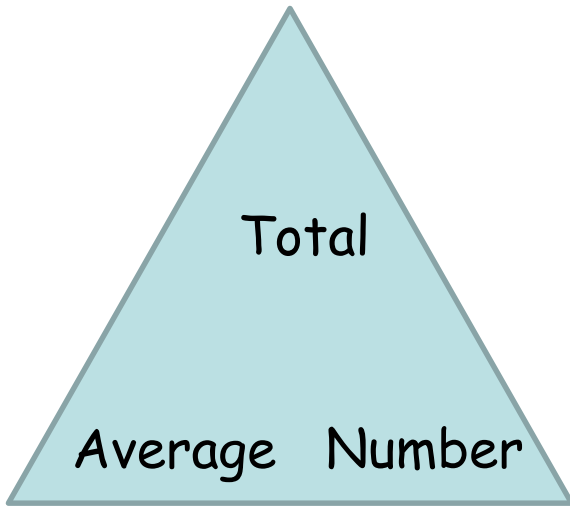
$100\% \rightarrow 375$ monkeys

$84\% \rightarrow 315$ monkeys \rightarrow number of brown monkeys

$315 - 90 = 225 \rightarrow$ number of brown male monkeys

$(225/375) \times 100 = 60\%$ (ans)

AVERAGES



Total (T) equals to Average(A) multiplied by the Number of items (N). Average equals total divided by the number of items etc.

The triangle is the best way to represent this information. Difficult math problem sums need you to use 2 TAN triangles.

The idea is to fill in as much information as possible and try to find the missing information.

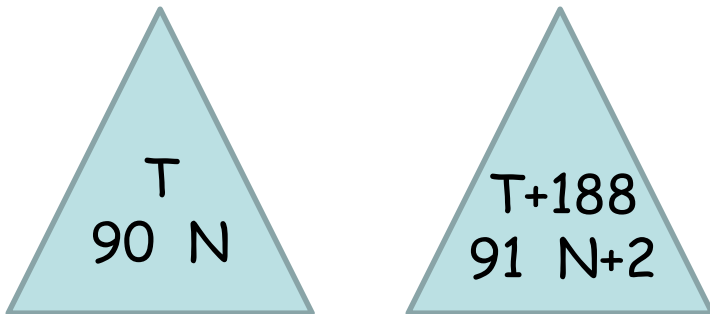
I call them Mr and Mrs TAN by the way.

AVERAGES

Question

A certain number of cups of tea was brewed in the coffeeshop. The average weight of a cup of tea was 90 grams. After 2 additional cups of tea each 94 grams were added, the average weight became 91 grams. How many cups of tea were there at first?

Solution



From first triangle

$$T=90N$$

Put into 2nd triangle

$$90N + 188 = 91(N+2)$$

$$90N + 188 = 91N + 182$$

$$1N = 6$$

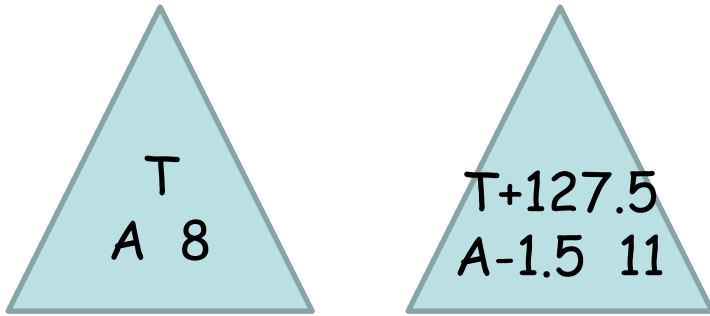
Therefore there were 6 cups of tea at first.

AVERAGES

Question

Mr Yam went shopping and bought 8 skirts from the first shop. Then, he bought 3 more identical skirts at \$42.50 each from the second shop. The average cost of all his skirts was decreased by \$1.50. What was the total cost of the 11 skirts?

Solution



From first triangle

$$T = 8A$$

Put into 2nd triangle

$$8A + 127.50 = 11(A - 1.5)$$

$$8A + 127.50 = 11A - 16.50$$

$$3A = 144$$

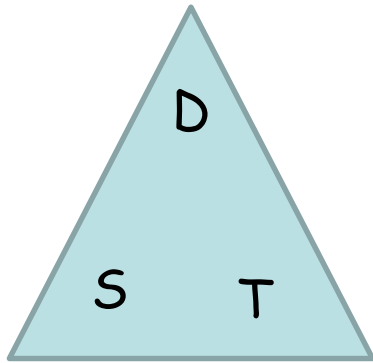
$$1A = 48$$

$$48 - 1.5 = 46.50$$

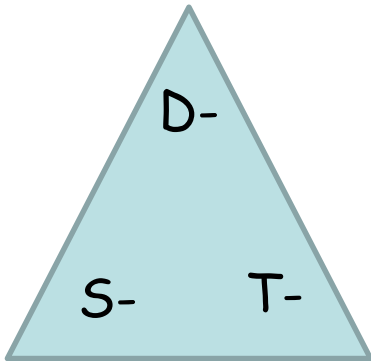
$$46.50 \times 11 = 511.50$$

The total cost of the 11 skirts is \$511.50.

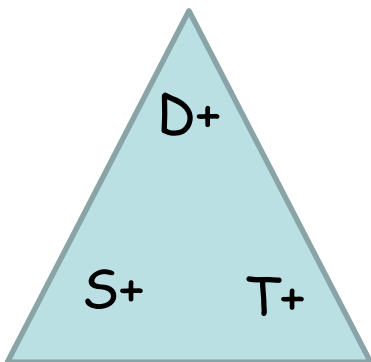
Speed



Distance = Speed \times Time



Difference in Distance =
Difference in Speed \times
Difference in Time



Sum of Distance = Sum of
Speed \times Sum of Time

Difficult speed questions usually involve 2 or more vehicles so you need to create the sum or difference DST triangle.

There are 3 types of difficult speed questions.

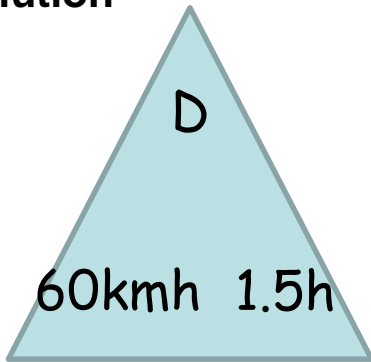
1. Difference in speed
2. Sum of speed
3. DST ratio

Difference in Speed

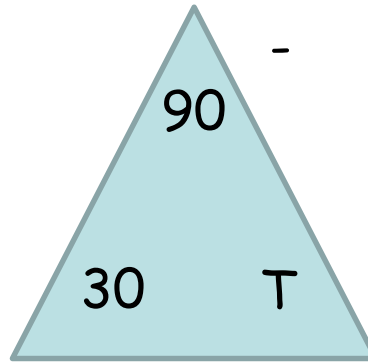
Question

At 7.30 am, a lorry started travelling from Ang Mo Kio to Bishan at an average speed of 60km/h. At 9.00 am a car started from the same location travelling to Bishan at an average speed of 90km/h. How long does it take the car to pass the lorry?

Solution



DST Triangle



Difference
DST Triangle

From DST triangle

Distance travelled by Lorry in 1.5 hours = $60 \times 1.5 = 90\text{km}$

Put into 2nd triangle (Difference DST triangle)

Difference in distance = 90km

Difference in speed = $90 - 60 = 30\text{km/h}$

Time taken to overtake = $90/30 = 3\text{hours}$

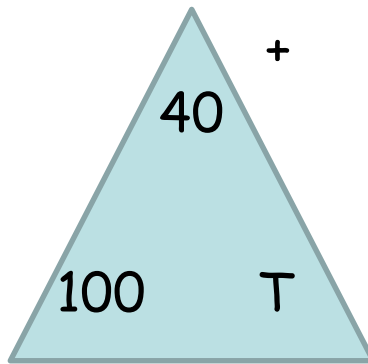
Therefore it takes 3 hours for the car to pass the lorry.

Sum of Speed

Question

The distance between Yishun and Orchard is 40km. A lorry travels from Yishun to Orchard at 40km/h. At the same time, a car travels from Orchard to Yishun travelling at 60km/h. How long does it take for them to pass each other?

Solution



Sum DST
Triangle

Sum of distance = 40km

Sum of speed = 60 + 40 = 100km/h

Time taken to meet = $40/100 = 0.4$ hours = 24mins

Therefore it takes 24 mins for the car to meet the lorry.

DST ratio

Question

John walks at a speed of 8km/h to the mall and then he walks at a speed of 7km/h back to home. He took a total time of 45 min to and fro. What is the time taken to walk back home?

Solution

	<u>To Mall</u>	<u>Back Home</u>	<u>Total</u>
Distance	?	?	
Speed	8kmh	7kmh	
Time	7units	8units	45mins

Ratio of speed and time are always in reverse because higher speed means lesser time.

$$7u + 8u = 15u$$

$$45/15 = 3$$

$$1u \rightarrow 3 \text{ mins}$$

$$8 \times 3 = 24$$

Ans: 24 mins

DST ratio

Question

John walked to school at 10km/h. He then took a bus back at an average speed of 30km/h. The bus journey took 20min less than him walking. What is the distance between his home and the school?

Solution

	<u>To School</u>	<u>Back Home</u>	<u>Difference</u>
Distance	?	?	
Speed	10kmh	30kmh	
Time	3units	1units	20mins

Ratio of speed and time are always in reverse because higher speed means lesser time.

$$2u \rightarrow 20\text{mins}$$

$$1u \rightarrow 10\text{mins} = 1/6 \text{ hour}$$

$$\text{Distance} = 30 \times (1/6) = 5\text{km}$$

Ans: 5 km

DST ratio

Question

John took 2 hours to travel from Katong to Suntec. Lena took 6 hours to travel from Suntec to Katong. How long does it take for them to pass each other?

Solution

Sometimes you need to compare 1 hour

	<u>John</u>	<u>Lena</u>
In 1 hour	$\frac{1}{2}$ of distance	$\frac{1}{6}$ of distance

$$\frac{1}{2} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$$

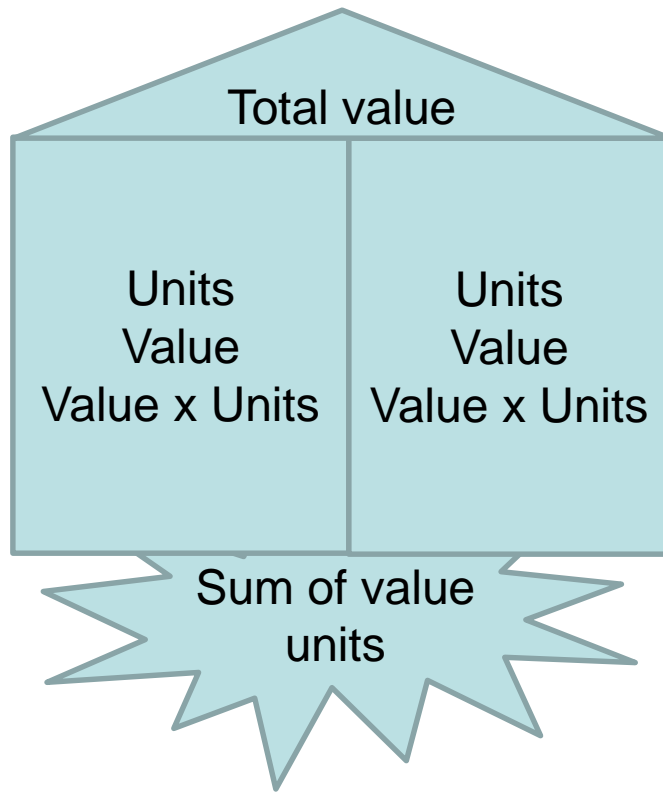
$\frac{2}{3}$ distance \rightarrow 1 hour

$\frac{1}{3}$ distance \rightarrow $\frac{1}{2}$ hour

$\frac{3}{3}$ distance \rightarrow 1.5 hours

They will need 1.5 hours to pass each other.

VALUE AND NUMBER OF UNITS



The rocket will help you solve value and units questions. Just put in the units and values and multiply then BOOM find the sum.

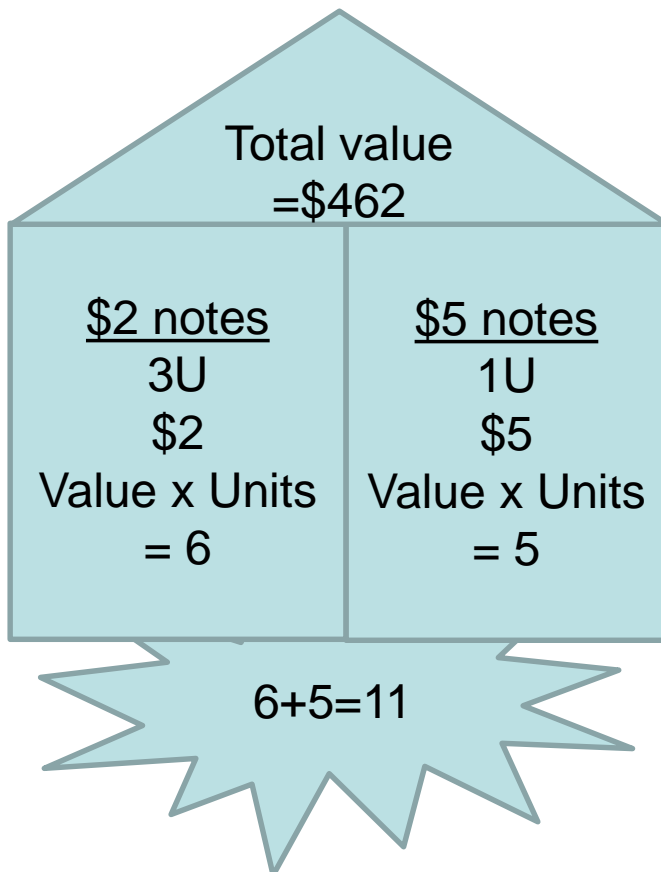
Divide the total value by the sum of value units to find how many items 1 unit represents.

VALUE AND NUMBER OF UNITS

Question

There are thrice as many \$2 notes as \$5 notes in a bag. Given that the total amount of money in the bag is \$462, how many \$5 notes are there?

Solution



$$\$462/11 = 42$$

$$1U \rightarrow 42$$

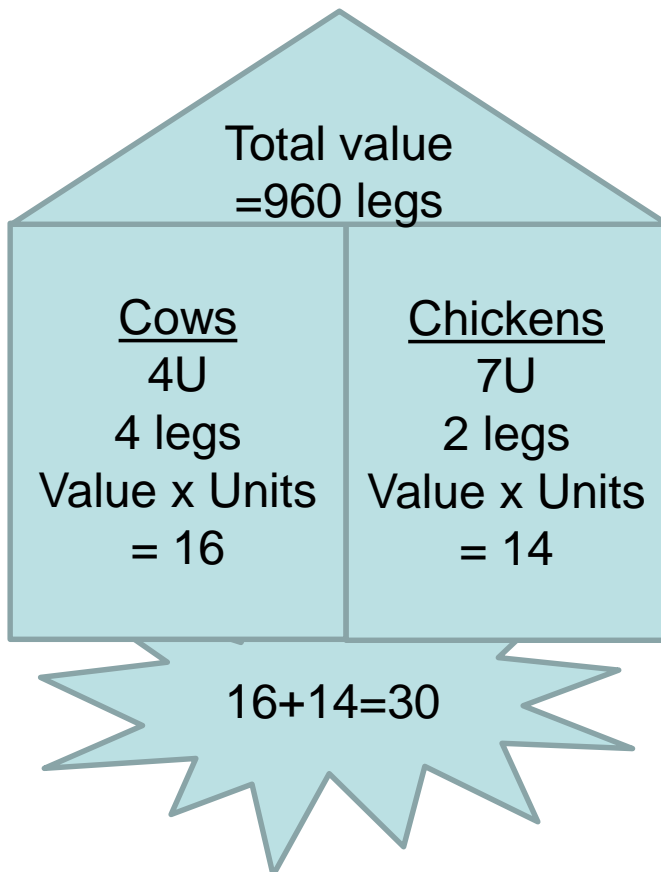
There are 42 \$5 notes.

VALUE AND NUMBER OF UNITS - Ratio

Question

The ratio of the number of cows to number of chickens was 4:7. Given that there are 960 legs altogether, how many cows are there?

Solution



$$960/30 = 32$$

$$1U \rightarrow 32$$

$$4U \rightarrow 128$$

There are 128 cows.

VALUE AND UNITS - Grouping

The solution to this type of question needs you to find Total (T), More/Less (M) and then divide by the Sum. Reminds me of Tim Sum.

Question

Ken bought 2 more pairs of singlet than shirts and paid a total of \$124. Each shirt costs \$8 and each singlet costs \$12. How many shirts did he buy

Solution

<u>Total</u> \$124	<u>More</u> \$12x2=\$24
<u>Sum</u> 12+8 = 20	

$$\$124 - \$24 = \$120$$

$$\$120 / 20 = 5$$

He bought 5 shirts

Work Backwards

Question

In chomp chomp hawker centre, Hawker A and Hawker B had a total of 1540 fishballs. Hawker A gave $\frac{3}{8}$ of his fishballs to Hawker B. Hawker B then gave $\frac{1}{5}$ of his fishballs to Hawker A. In the end Hawker B had $\frac{2}{3}$ as many fishballs as Hawker A. How many fishballs did each of them have at first?

Solution

Step 1: Understand the problem

	Hawker A	Hawker B	Total
Ratio Before	?	?	1540
+/-	$-\frac{3}{8}$	$+\frac{3}{8}$	
Ratio Interim	?	?	
+/-	$+\frac{1}{5}$	$-\frac{1}{5}$	
Ratio After	3	2	

Step 2: Work backwards to obtain ratio interim

	Hawker A	Hawker B	Total
Ratio Before	?	?	1540
+/-	-3/8	+3/8	
Ratio Interim	?	?	
+/-	+1/5	-1/5	
Ratio After	3	2	

At the ratio interim, since Hawker B gave $1/5$ to Hawker A

$$5/5 - 1/5 = 4/5$$

$$4/5 = 2 \text{ units}$$

$$1/5 = 0.5 \text{ units}$$

$$5/5 = 2.5 \text{ units}$$

Step 3: Update the table and work backwards again

	Hawker A	Hawker B	Total
Ratio Before	?	?	1540
+/-	-3/8	+3/8	
Ratio Interim	2.5	2.5	
+/-	+1/5	-1/5	
Ratio After	3	2	

At the ratio before, since Hawker A gave $\frac{3}{8}$ to Hawker B

$$\frac{8}{8} - \frac{3}{8} = \frac{5}{8}$$

$$\frac{5}{8} = 2.5 \text{ units}$$

$$\frac{1}{8} = 0.5 \text{ units}$$

$$\frac{3}{8} = 1.5 \text{ units}$$

$$\frac{8}{8} = 4 \text{ units}$$

Step 4: Update the table again and solve

	Hawker A	Hawker B	Total
Ratio Before	4	1	1540
+/-	-3/8	+3/8	
Ratio Interim	2.5	2.5	
+/-	+1/5	-1/5	
Ratio After	3	2	

5 units = 1540

1 unit = 308 (ans) --→ Hawker B

4 units = 1232 (ans) --→ Hawker A

Bonus – extra short

Question

Jim packed 5 balls into each bag and found out that he had 7 balls left over. If he packed 6 balls into each bag, he would need another 5 more balls.

- How many bags did he have?
- How many balls did he have altogether?

Solution

$$7 \text{ extra} + 5 \text{ short} = 12$$

$$6 \text{ balls} - 5 \text{ balls} = 1$$

To find number of bags just take sum of extra short and divide by the difference

$$12/1=12$$

He had 12 bags. (Ans)

$$12 \times 5 + 7 = 67$$

He had 67 balls. (Ans)

WHAT DO YOU HAVE TO LOSE?

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2A Maju Avenue (Serangoon Garden Estate) Singapore 556680 . Tel: 6289 4551 . Fax: 6382 3220