



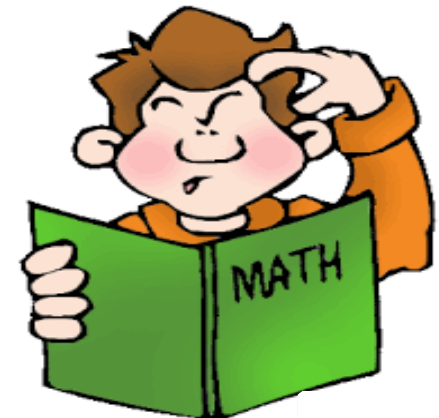
P4 Math Workshop



For Parents
7 April 2017

Objectives

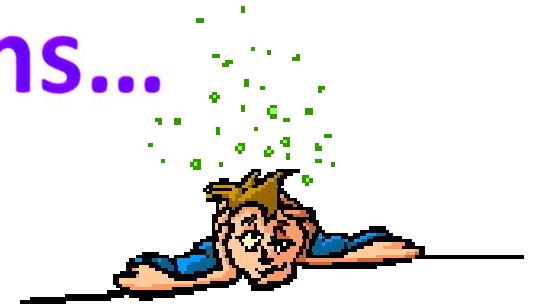
- to use Polya's 4-step problem-solving method to solve word problems
- to solve Math problems using the Model Drawing approach.



Why students have difficulty solving Math problems...

Too difficult

Do not understand



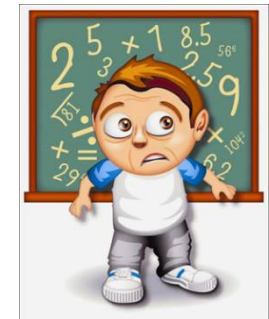
Question too long



Not able to pick out the gist of the question



Language



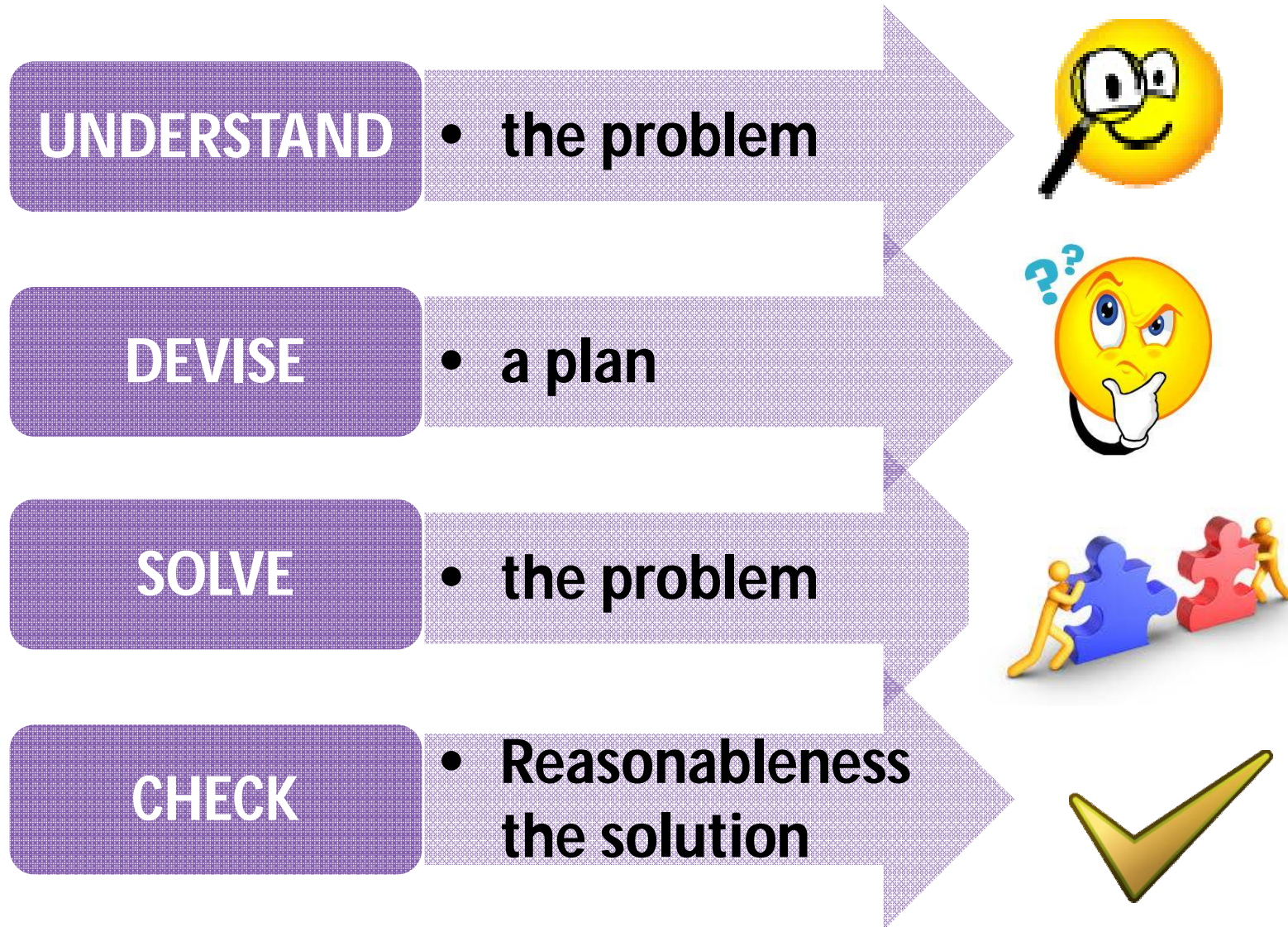
Simply give up

*It's not that I'm so smart, it's just
that I stay with problems longer.*

Albert Einstein



Polya's Math Problem Solving Steps



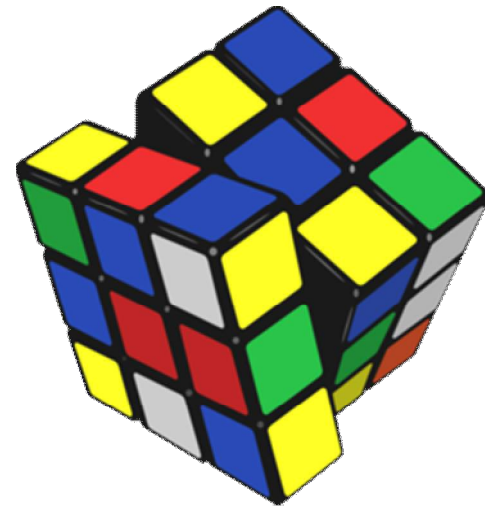
1. Understand the problem

- What are you asked to find out or show?
 - Read the problem in chunks
 - Organise information given
 - Highlight key words
 - Draw a picture, diagram, model
 - Restate the problem in your own words
 - Solve part of the problem



2. Devise a plan

- ❑ A partial list of Problem Solving Strategies include:
 - Guess and check
 - Solve part of the problem
 - Make an organized list
 - Draw a picture, diagram, model
 - Look for a pattern
 - Work backwards
 - Make a table



3. Solve the Problem

- Solving the problem is usually easier than devising the plan
- Be patient – most problems are not solved quickly nor on the first attempt
- If a plan does not work immediately, be persistent
- Do not let yourself get discouraged · If one strategy isn't working, try a different one

4. Look back (Check)

- Is the solution reasonable?
 - Check for reasonableness of answer
- Are the units correct?
- Did you answer all of the questions?
- Could you have done this problem another way



Meaningful Learning in Mathematics



- Action-based information
- Use of real objects

- Image-based information

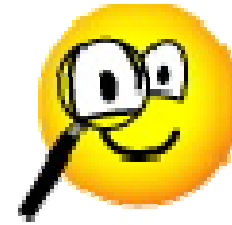
- Language – based information
- Written symbols



Math Problem Solving Steps

UNDERSTAND

- **the problem**



DEVISE

- **a plan**



SOLVE

- **the problem**



CHECK

- **Reasonableness
the solution**



Choon Hao is between 20 and 35 years old now. His present age is a multiple of 3. Next year, his age will be a multiple of 5. How old will he be next year?

At a supermarket, Tim paid \$5.45 for 6 bottles of orange juice. For every 6 bottles of orange juice bought, 2 additional bottles would be given free. Tim left the supermarket with a total of 72 bottles of orange juice.

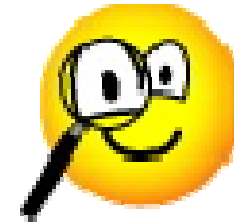
How much did he have to pay in all?

Round off your answer to the nearest dollar.

Math Problem Solving Steps

UNDERSTAND

- **the problem**



CHOOSE

- **a strategy**



SOLVE

- **the problem**



CHECK

- **Reasonableness
the solution**



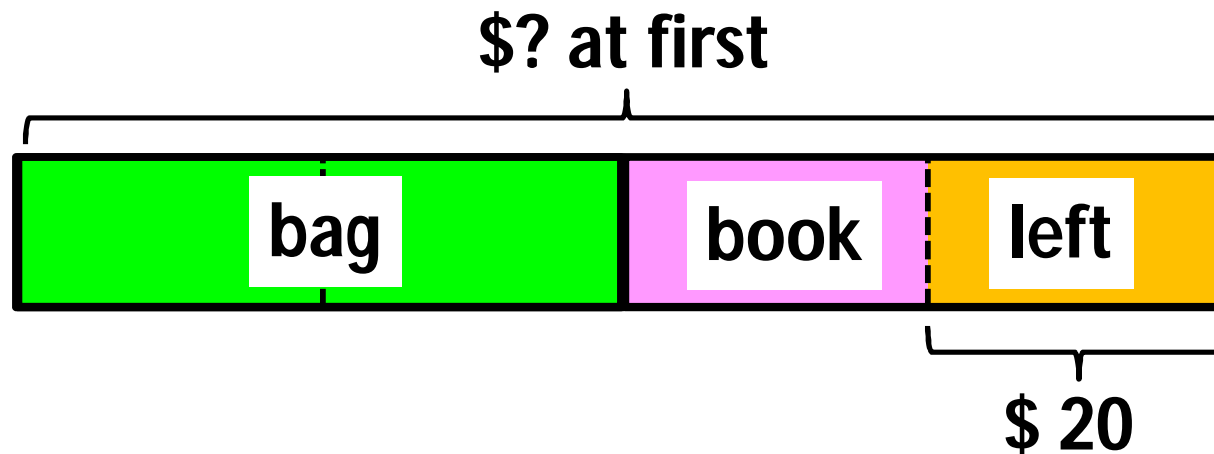
Last year, 2017, P3 Parents Workshop

- Part Whole Model**
- Comparison Model**

Today, 2018, P4 Parents Workshop

- Combination of Part-Whole & Unitary Models**
- Combination of Comparison & Unitary Models**

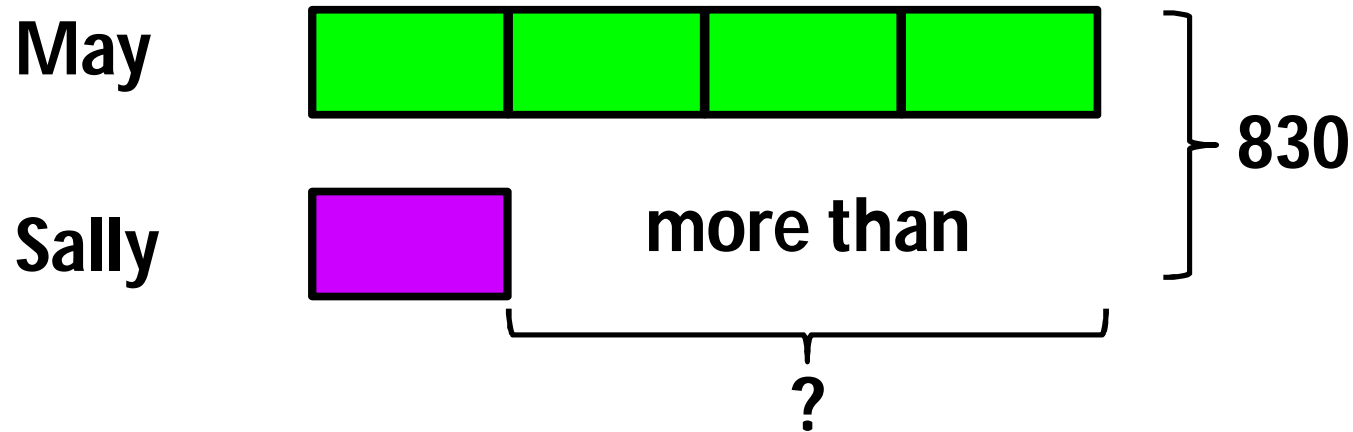
Q1) After John spent $\frac{1}{2}$ of his money on a bag and $\frac{1}{4}$ of it on a book, he had \$20 left. How much money had John at first?



1 unit — \$20
at first -> 4 units — $4 \times \$20 = \80

John had \$80 at first.

Q2) May and Sally have 830 balloons altogether. May has 4 times as many balloons as Sally. How many more balloons does May have than Sally?



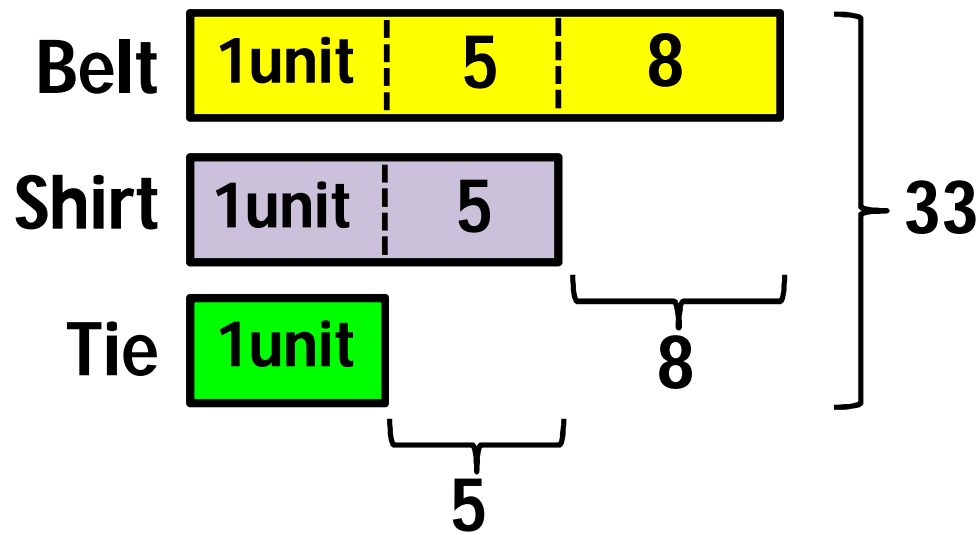
$$5 \text{ units} \text{ — } 830$$

$$1 \text{ unit} \text{ — } 830 \div 5 = 166$$

$$\text{More} \text{ -> } 3 \text{ units} \text{ — } 3 \times 166 = 498$$

May has 498 more balloons than Sally.

**Q3) Sam spent \$33 on a shirt, a belt and a tie.
The shirt cost \$5 more than the tie.
The belt cost \$8 more than the shirt.
How much did the belt cost?**



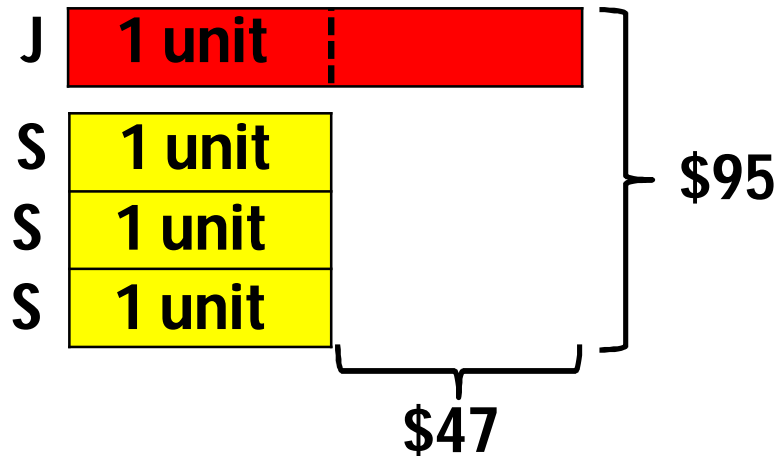
$$3 \text{ units} - 33 - 5 - 5 - 8 = 15$$

$$1 \text{ unit} - 15 \div 3 = 5$$

$$\text{Belt} \rightarrow 5 + 5 + 8 = 18$$

The belt cost \$18.

Q4) The total cost of jacket and 3 pairs of socks is \$95. The jacket costs \$47 more than a pair of socks. How much does the jacket cost?



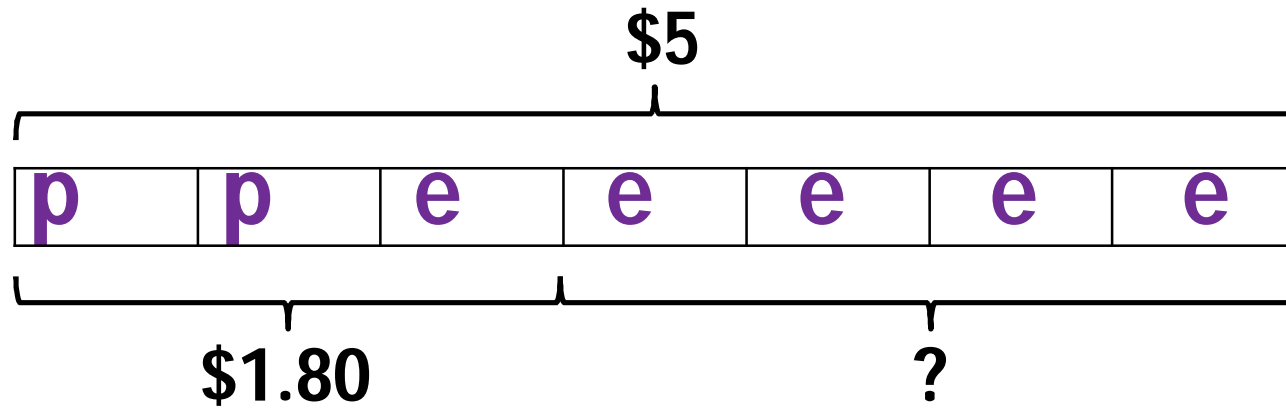
$$4 \text{ units} \text{ --- } 95 - 47 = 48$$

$$1 \text{ unit} \text{ --- } 48 \div 4 = 12$$

$$\text{Jacket} \rightarrow 1 \text{ unit} + 47 = 12 + 47 = 59$$

The jacket cost \$59.

Q5) The cost of 2 pencils and 5 erasers is \$5 altogether. The cost of 2 pencils and 1 eraser is \$1.80. What is the cost of one eraser?



$$4 \text{ units --- } 5 - 1.80 = 3.20$$
$$1 \text{ Eraser --- } 1 \text{ unit --- } 3.20 \div 4 = 0.80$$

One eraser costs \$0.80.

What parents can do...

- Build confidence
- Small success
- Conceptual understanding
- Make new connections to what they already know
- Get pupils to communicate process thinking
- Questioning
 - ✓ Probe understanding
 - ✓ Deepen learning

Parents' Evaluation and Feedback For Parents' Workshops 2018

- Presentation slides will be available on our school website within one week after the workshops.
- Please scan the QR Code or use the link to give us your valuable feedback.



<https://tinyurl.com/y9m65zxr>

