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Problem Solving - Year 2

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Problem-Solving Pathway

1

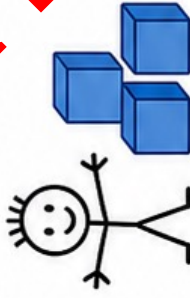
READ



What is the problem asking?

3

CHOOSE



Item	Number
	3
	5
	8

$$3 + 5 = 8$$

Draw it, act it, make a table or write a number sentence.

4

SOLVE



Work on each step.

5

EXPLAIN & CHECK



Does my answer make sense?

1. READ & RETELL



What is the problem?



What is the problem asking?



Tell the problem in your own words.



2. FIND THE IMPORTANT INFORMATION



What do I know?



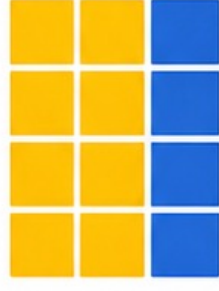
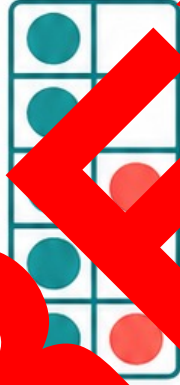
What do I need
to find?



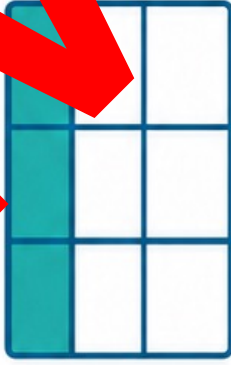
Which numbers and
words matter?

3. REPRESENT & CHOOSE

Make a model.



Choose a strategy.



Add, subtract, multiply or divide.

6

+

4

=

10

4. SOLVE EXPLAIN & CHECK



Show your working.



Answer in a sentence.



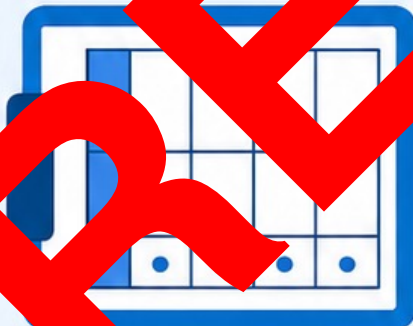
Does the answer make sense?



Problem Solving Strategy Toolbox



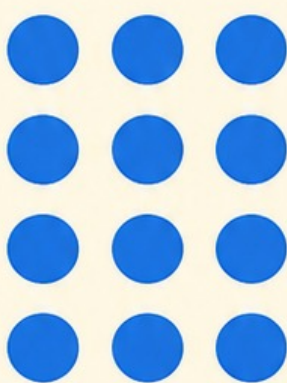
Draw a picture



Make a list or table



Use a number line



Build equal groups or an array



Use coins and notes



Work backwards



Guess and check



My Problem-Solving Check

☐

I read and retold the problem.

☐

I found the important information.

☐

I made a model.

☐

I solved the problem.

☐

I explained and checked my answer.

$\frac{1}{2}$



My Problem-Solving Check

☐

I read and retold the problem.

☐

I found the important information.

☐

I made a model.

☐

I solved the problem.

☐

I explained and checked my answer.

$\frac{1}{2}$



Think-Board Challenge



What do I know?

What do I need to find?

THE PROBLEM

Draw or make a model

Number sentence and strategy

Answer and check

2



3

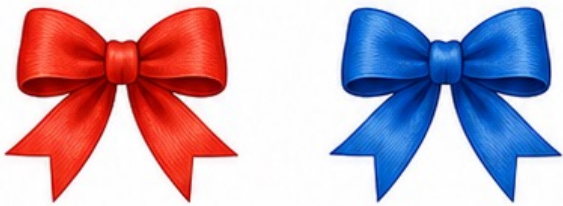


$\frac{1}{2}$

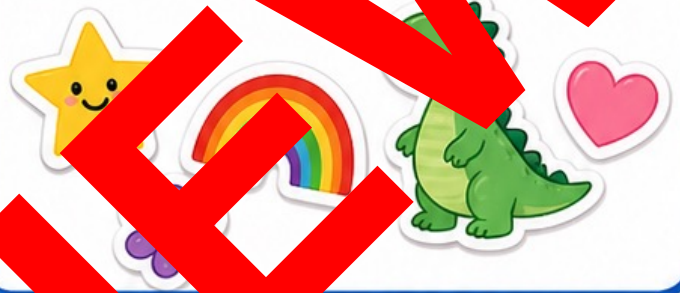


Think-Board Challenge Cards

1. There are 23 red ribbons and 16 blue ribbons. How many ribbons altogether?



2. Mina has 45 stickers and gives 18 away. How many remain?



3. There are 4 baskets with 5 oranges in each. How many oranges?



4. Share 24 crackers equally among 6 plates. How many on each plate?



5. A juice costs \$2. How much do 3 juices cost?



6. There are 18 balloons, then 12 more arrive and 7 pop. How many remain?



Problem-Solving Trail



1



2



3



4



5



Move ahead 1

10



Try another card

9



8



7



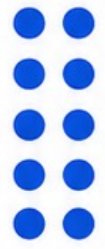
6



11



12



13



14



15



Check your model

20



19



18



17

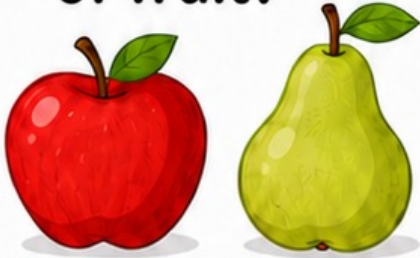


16



Problem-Solving Trail Cards – Set A

1. 28 apples and 14 pears.
How many pieces of fruit?



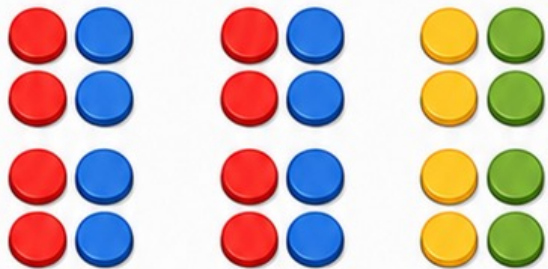
2. 53 tickets, 26 used.
How many remain?



3. 5 bags with 4 marbles in each.
How many marbles?



4. Share 24 counters among 6 teams.
How many per team?



5. What is the total of three 50c coins?



6. You have \$5 and spend \$2.
How much remains?



Problem-Solving Trail Cards – Set B

7. 17 shells and
9 more.
How many shells?



8. 40 pencils,
18 are used.
How many remain?



9. 3 boxes with
6 balls in each.
How many balls?



10. There are 21 cards
among 3 players.
How many each?



11. There are 20 birds,
5 arrive and
fly away.
How many remain?



12. Four teams have
5 players each,
plus 2 helpers.
How many people
altogether?



Problem-Solving Trail — ANSWERS



$$\textcircled{1} - 42$$

$$\textcircled{2} - 27$$

$$\textcircled{3} - 20$$

$$\textcircled{4} - 4$$

$$\textcircled{5} - \$1.50$$

$$\textcircled{6} - \$3$$

$$\textcircled{7} - 26$$

$$\textcircled{8} - 22$$

$$\textcircled{9} - 18$$

$$\textcircled{10} - 7$$

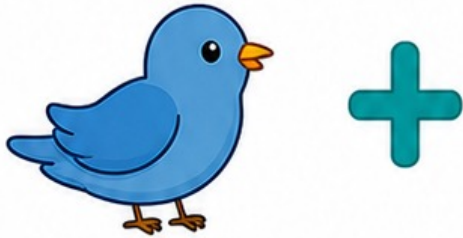
$$\textcircled{11} - 27$$

$$\textcircled{12} - 22$$

Match the Model – Situation Cards



1. 18 birds and 7 more arrive.



2. 36 stickers and 19 are given away.



3. 4 bags with 5 shells in each.



4. 24 pencils among 6 children.



5. A 50c coin, 20c coin and 10c coin.



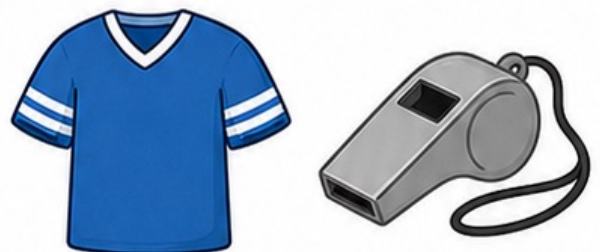
6. Start with \$5 and spend \$2.



7. 15 balloons, 8 more arrive and 5 pop.



8. Three teams have 6 players each, plus 2 coaches.



Match the Model – Model Cards

$$A. 18 + 7 = 25$$

$$B. 36 - 19 = 17$$

$$C. 4 \times 5 = 20$$

$$D. 24 \div 6 = 4$$

$$E. 50c + 20c + 10c = 80c$$

$$F. \$5 - \$2 = \$3$$

$$G. 13 + 8 - 5 = 16$$

$$H. 3 \times 6 + 2 = 20$$

Match the Model — ANSWERS

1

A

$$18 + 7 = 25$$

2

B

$$36 - 19 = 17$$

3

C

$$4 \times 5 = 20$$

4

D

$$24 \div 6 = 4$$

5

E

$$30c + 20c + 10c = 80c$$

6

F

$$\$5 - \$2 = \$3$$

7

G

$$13 + 8 - 5 = 16$$

8

H

$$3 \times 6 + 2 = 20$$

Read, Retell, Represent — Page 1

Name: _____

1. There are 18 yellow flags and 14 green flags.
How many flags altogether?



What I know

What I need to find

Choose: + - × ÷

Answer: _____



2. Sam has 45 cards and gave 19 away.
How many cards remain?



What I know

What I need to find

Choose: + - × ÷

Answer: _____



Read, Retell, Represent — Page 1

Name: ANSWERS

1. There are 18 yellow flags and 14 green flags.
How many flags altogether?



What I know

18 yellow flags
and 14 green flags

What I need to find

the total number
of flags

Choose: + - $\times$ $\div$

Answer: 32 flags



2. Sam has 47 cards and gave 19 away.
How many cards remain?



What I know

47 cards;
19 given away

What I need to find

how many cards
remain

Choose: + - $\times$ $\div$

Answer: 28 cards



Read, Retell, Represent — Page 2

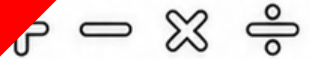
Name: _____

1. Four trays hold 5 muffins each. How many muffins?

My picture or model



Number sentence

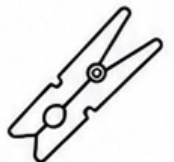


Answer in a sentence

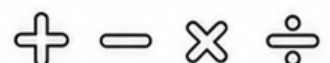


2. Share 24 pegs equally among 6 groups. How many pegs in each group?

My picture or model



Number sentence



Answer in a sentence



Read, Retell, Represent — Page 2

Name: ANSWERS

1. Four trays hold 5 muffins each. How many muffins?

My picture or model



Number sentence

$$4 \times 5 = 20$$

$\div$ $-$ $\times$ $\div$

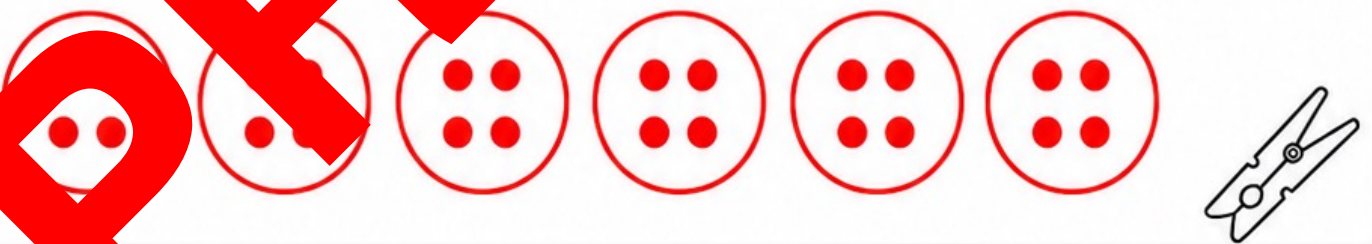
Answer in a sentence

There are 20 muffins.



2. Share 24 pegs equally among 6 groups. How many pegs in each group?

My picture or model



Number sentence

$$24 \div 6 = 4$$

$+$ $-$ $\times$ $\div$

Answer in a sentence

There are 4 pegs in each group.



Name: _____

Additive Adventures — Page 1

1. The library has 36 storybooks and buys 27 more.
How many storybooks now?

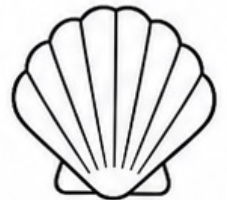


Strategy

Number sentence

Answer

2. Kai collected 18 shells and finds 15 more.
How many shells altogether?



Number sentence

Answer

Name: ANSWERS

Additive Adventures — Page 1

1. The library has 36 storybooks and buys 27 more.
How many storybooks now?



Strategy

Partition and add.

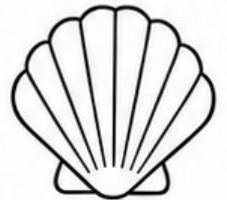
Number sentence

$$36 + 27 = 63$$

Answer

63 storybooks

2. Kai collected 48 shells and finds 15 more.
How many shells altogether?



Strategy

Partition and add.

Number sentence

$$48 + 15 = 63$$

Answer

63 shells

Name: _____

Additive Adventures — Page 2

1. There are 72 balloons and 28 pop. How many remain?



Strategy

Number sentence

Answer

2. There are 35 birds. Twenty stay in the tree.
How many fly away?



Strategy

Number sentence

Answer

Name: **ANSWERS**

Additive Adventures — Page 2

1. There are 72 balloons and 28 pop. How many remain?



Strategy

Subtract tens and ones.

Number sentence

$$72 - 28 = 44$$

Answer

44 balloons

2. There are 35 birds. Twenty stay in the tree.
How many fly away?



Strategy

Use subtraction.

Number sentence

$$35 - 17 = 18$$

Answer

18 birds

Equal Groups and Arrays – Page 1

Name: _____

1. Three rows have 6 plants in each row. How many plants?



Draw an array or equal groups

Repeated addition

Multiplication sentence

Answer

2. Five bags hold 4 marbles each. How many marbles?



Draw an array or equal groups

Repeated addition

Multiplication sentence

Answer

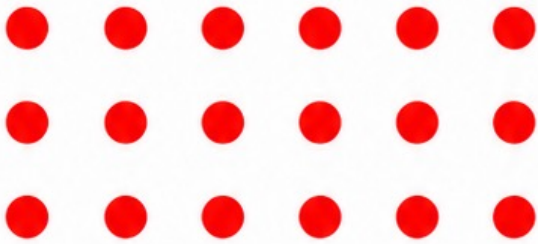
Equal Groups and Arrays – Page 1

Name: **ANSWERS**

1. Three rows have 6 plants in each row. How many plants?



Draw an array or equal groups



Repeated addition

$$6 + 6 + 6 = 18$$

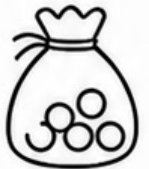
Multiplication sentence

$$3 \times 6 = 18$$

Answer

18 plants

2. Five bags hold 4 marbles each. How many marbles?



Draw an array or equal groups



Repeated addition

$$4 + 4 + 4 + 4 + 4 = 20$$

Multiplication sentence

$$5 \times 4 = 20$$

Answer

20 marbles

Equal Groups and Arrays — Page 2

Name: _____

1. Share 20 biscuits equally among 5 plates. How many on each plate?

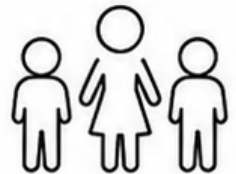


Draw the equal groups

Division sentence

Answer

2. Put 18 children in 3 equal teams.
How many in each team?



Draw the equal groups

Division sentence

Answer

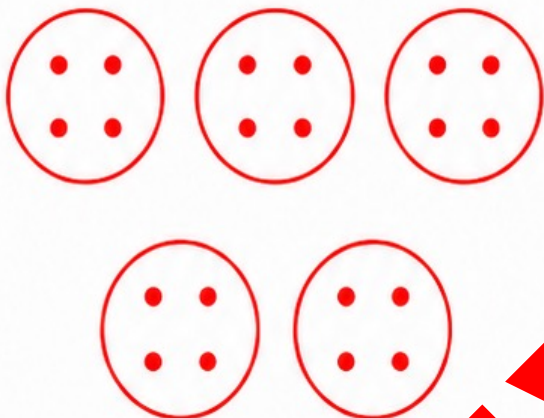
Equal Groups and Arrays — Page 2

Name: **ANSWERS**

1. Share 20 biscuits equally among 5 plates. How many on each plate?



Draw the equal groups



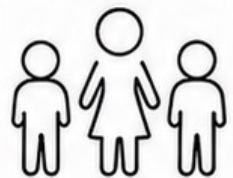
Division sentence

$$20 \div 5 = 4$$

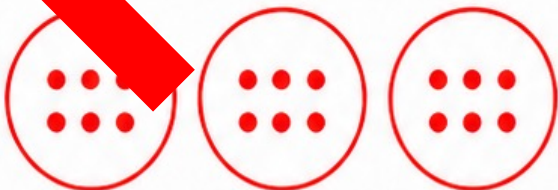
Answer

4 biscuits

2. Put 18 children into 3 equal teams.
How many in each team?



Draw the equal groups



Division sentence

$$18 \div 3 = 6$$

Answer

6 children

Money Matters — Page 1

Name: _____

1. A pencil costs 50c and an eraser costs 20c.
What is the total cost?

50c

20c

Model

Number sentence

Answer

2. A notebook costs \$3 and a ruler costs \$2.
What is the total cost?

\$3

\$2

Model

Number sentence

Answer

Money Matters — Page 1

Name: **ANSWERS**

1. A pencil costs 50c and an eraser costs 20c.
What is the total cost?

50c

20c

Model

$50c + 20c$

Number sentence

$50c + 20c = 70c$

Answer

70c

2. A notebook costs \$3 and a ruler costs \$2.
What is the total cost?

\$3

\$2

Model

$\$3 + \2

Number sentence

$\$3 + \$2 = \$5$

Answer

\$5

Money Matters — Page 2

Name: _____

1. Leah has \$5 and spends \$2. How much money remains?

\$5

\$2

Model

Number sentence

Answer

2. One juice costs \$2. How much do 4 juices cost?



\$2

Model

Number sentence

Answer

Money Matters — Page 2

Name: _____ **ANSWERS**

1. Leah has \$5 and spends \$2. How much money remains?

\$5

\$2

Model

$\$5 - \2

Number sentence

$\$5 - \$2 = \$3$

Answer

\$3

2. One juice costs \$2. How much do 4 juices cost?



\$2

Model

$\$2$ $\$2$ $\$2$ $\$2$

Number sentence

$4 \times \$2 = \8

Answer

\$8

Mixed Problem-Solving Challenge — Page 1

Name: _____

1. There are 28 red beads and 16 blue beads.
How many beads?

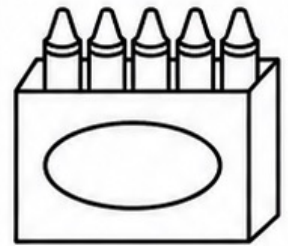


Choose: + - × ÷

Number sentence

Answer _____

2. A box has 61 crayons and 24 are used.
How many remain?



Choose: + - × ÷

Number sentence

Answer _____

3. Four teams have 6 players each.
How many players?



Choose: + - × ÷

Number sentence

Answer _____

Mixed Problem-Solving Challenge — Page 1

Name: ANSWERS

1. There are 28 red beads and 16 blue beads.
How many beads?



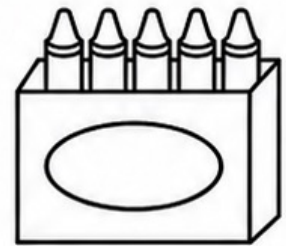
Choose: ☒ + − × ÷

Number sentence

$$28 + 16 = 44$$

Answer 44 beads

2. A box has 61 crayons and 24 are used.
How many remain?



Choose: + ☒ − ÷

Number sentence

$$61 - 24 = 37$$

Answer 37 crayons

3. Four teams have 6 players each.
How many players?



Choose: + − ☒ × ÷

Number sentence

$$4 \times 6 = 24$$

Answer 24 players

Mixed Problem-Solving Challenge – Page 2

Name: _____

1. Three trays hold 6 muffins each. Five muffins are sold.
How many remain?



My model

First number sentence

Second number sentence

Explain and check

2. A class has \$20 and buys 3 packs of seeds for \$4 each.
How much money remain?



My model

First number sentence

Second number sentence

Explain and check

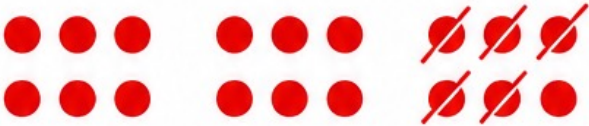
Mixed Problem-Solving Challenge – Page 2

Name: **ANSWERS**

1. Three trays hold 6 muffins each. Five muffins are sold.
How many remain?



My model



First number sentence

$$3 \times 6 = 18$$

Second number sentence

$$18 - 5 = 13$$

Explain and check

13 muffins remain. $13 + 5 = 18$.

2. A class has \$20 and buys 3 packs of seeds for \$4 each.
How much money remains?



My model



First number sentence

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

Second number sentence

$$\$20 - \$12 = \$8$$

Explain and check

\$8 remains. $\$12 + \$8 = \$20$.

Strategy Puzzles – Target Ten

Name: _____

Circle every trio that totals 10.

1. 7, 2, 1	2. 4, 3, 2	3. 5, 0, 5
4. 6, 1, 3	5. 8, 2, 1	6. 2, 4, 4
7. 9, 0, 1	8. 3, 3, 5	9. 7, 1, 1
10. 5, 2, 3	11. 4, 4, 1	12. 6, 2, 2

Explain your strategy: _____

Strategy Puzzles – Target Ten

Name: ANSWERS

Circle every trio that totals 10.

1. 7, 2, 1	2. 4, 3, 2	3. 5, 0, 5
4. 6, 1, 3	5. 8, 2, 1	6. 2, 4, 4
7. 9, 0, 1	8. 3, 3, 5	9. 7, 1, 1
10. 3, 2, 3	11. 4, 4, 1	12. 6, 2, 2

Explain your strategy: I looked for number bonds that make 10.

Strategy Puzzles — Route Challenge

Name: _____

Start at the top-left 2. Move only right or down. Find a route with a total of 27.

START 2	4	1	6
3	5	2	4
1	3	4	2
4	2	3	FINISH 5

My route

total

How I checked

Strategy Puzzles — Route Challenge

Name: ANSWERS

Start at the top-left 2. Move only right or down. Find a route with a total of 27.

START 2	4	1	6
3	5	2	4
1	3	4	2
4	2	3	FINISH 5

My route

Down, right, down, right, down, right

total

$$2 + 3 + 5 + 3 + 6 + 3 + 5 = 27$$

How I checked

The route totals 27 and uses only right or down.

Strategy Puzzles — Number Sudoku

Name: _____

Use 1, 2, 3 and 4 once in every row, column and 2×2 box.

1			4
	4	1	
	1	4	
4			1

1

2

3

4

How did you check? _____

Strategy Puzzles — Number Sudoku

Name: ANSWERS

Use 1, 2, 3 and 4 once in every row, column and 2×2 box.

1	2	3	4
3	4	1	2
2	1	4	3
4	3	2	1

1

2

3

4

How did you check? Each row, column and box has 1, 2, 3 and 4.

Strategy Puzzles – Work Backwards

Name: _____

1. After losing 8 points, Maya has 17 points.
How many points did she start with?



Work backwards

Number sentence

Answer

2. After buying a \$3 pencil, Leo has \$7.
How much money did he have before?



Work backwards

Number sentence

Answer

3. After 4 books are added to a shelf,
there are 22 books. How many were there before?



Work backwards

Number sentence

Answer

Strategy Puzzles – Work Backwards

Name: ANSWERS

1. After losing 8 points, Maya has 17 points.
How many points did she start with?



Work backwards

Add 8 to 17.

Number sentence

$17 + 8 = 25$

25 points

2. After buying a \$3 pencil, Leo has \$7.
How much money did he have before?



Work backwards

Add \$3 to \$7.

Number sentence

$\$7 + \$3 = \$10$

Answer

\$10

3. After 4 books are added to a shelf,
there are 22 books. How many were there before?



Work backwards

Subtract 4 from 22.

Number sentence

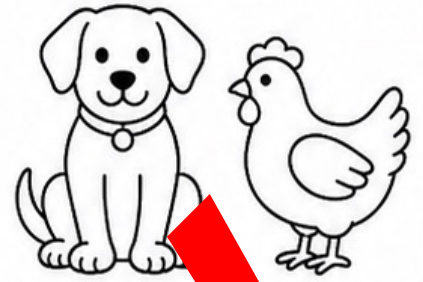
$22 - 4 = 18$

Answer

18 books

Strategy Puzzles — Guess and Check

Name: _____



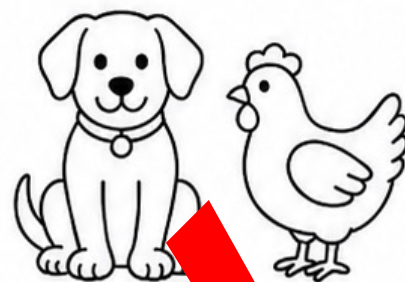
Dogs have 4 legs and chickens have 2 legs.
There are 7 animals and 20 legs altogether.
How many dogs and chickens are there?

Guess	Dogs	Chickens	Animals	Legs	Does it work?

Answer: There are _____ dogs and _____ chickens.

Strategy Puzzles — Guess and Check

Name: ANSWERS



Dogs have 4 legs and chickens have 2 legs.

There are 7 animals and 20 legs altogether.

How many dogs and chickens are there?

Guess	Dogs	Chickens	Animals	Legs	Does it work?
Trial 1	1	6	7	10	No
Trial 2	2	5	7	18	No
Trial 3	3	4	7	20	Yes
Trial 4	4	3	7	22	No

Answer: There are 3 dogs and 4 chickens.

$$3 \times 4 + 4 \times 2 = 20 \text{ legs.}$$

School Fair Solutions — Assessment Page 1

Name: _____

1. The craft stall sells 26 badges before lunch and 18 after lunch. How many badges are sold?



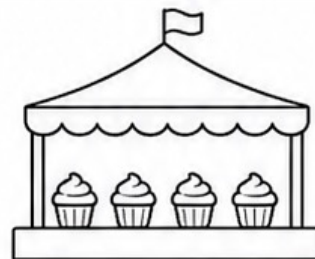
Important information

Model

Number sentence

Answer in context

2. There are 5 trays with 4 cupcakes on each tray.
How many cupcakes?



Important information

Model

Number sentence

Answer in context

School Fair Solutions — Assessment Page 1

Name: _____ **ANSWERS**

1. The craft stall sells 26 badges before lunch and 18 after lunch. How many badges are sold?



Important information

26 before lunch; 18 after lunch

Model



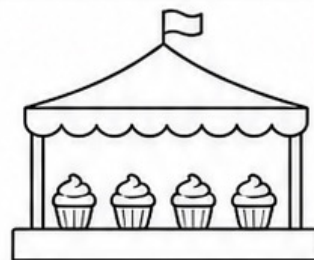
Number sentence

$$26 + 18 = 44$$

Answer in context

The stall sells 44 badges.

2. There are 5 trays with 4 cupcakes on each tray. How many cupcakes are there?



Important information

5 trays; 4 cupcakes on each

Model



Number sentence

$$5 \times 4 = 20$$

Answer in context

There are 20 cupcakes.

School Fair Solutions — Assessment Page 2

Name: _____

1. The stall starts with 60 tickets and sells 27. How many remain?



Model

Number sentence

Answer

2. Share 24 prizes equally among 6 boxes. How many in each box?



Model

Number sentence

Answer

3. One game costs \$3. Four friends play. How much altogether?



Model

Number sentence

Answer

School Fair Solutions — Assessment Page 2

Name: _____ **ANSWERS**

1. The stall starts with 60 tickets and sells 27. How many remain?



Model

$$60 - 27$$

Number sentence

$$60 - 27 = 33$$

33 tickets

2. Share 24 prizes equally among 6 boxes. How many in each box?



Model



Number sentence

$$24 \div 6 = 4$$

Answer

4 prizes

3. One balloon costs \$3. Four friends play. How much altogether?



Model



Number sentence

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

Answer

\$12

School Fair Solutions — Assessment Page 3

Name: _____

The stationery stall has 4 boxes
with 5 pencils in each box.
It sells 7 pencils.
How many pencils remain?



My model

First number sentence

Second number sentence

My answer

How checked

Why my answer makes sense

School Fair Solutions — Assessment Page 3

Name: **ANSWERS** _____

The stationery stall has 4 boxes with 5 pencils in each box.
It sells 7 pencils.
How many pencils remain?



My model

4 groups of 5 = 20

7 remain

First number sentence

$$4 \times 5 = 20$$

Second number sentence

$$20 - 7 = 13$$

My answer

13 pencils remain.

How I checked

$$13 + 7 = 20.$$

Why my answer makes sense

Four groups of 5 make 20; taking away 7 leaves 13.

Problem Solving – Year 2 Rubric

Student: _____ Date: _____

CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
1. Understands the situation	Needs help to retell. ☐	Identifies some information. ☐	Identifies what is known and needed. ☐	Connects all important information. ☐	Explains relationships and assumptions. ☐
2. Creates a useful model	Model is missing or unrelated. ☐	Makes a partial model. ☐	Makes an accurate model. ☐	Chooses and labels an efficient model. ☐	Compares models and justifies the best. ☐
3. Chooses and uses strategies	Needs help to begin. ☐	Tries a strategy with support. ☐	Uses a strategy. ☐	Uses an efficient strategy accurately. ☐	Uses another strategy to verify. ☐
4. Explains and checks the solution	Gives an answer only. ☐	Gives a brief explanation. ☐	Explains and checks the solution. ☐	Explains and justifies the solution. ☐	Evaluates and improves the explanation. ☐

Problem Solving



Problem Solving Quiz

