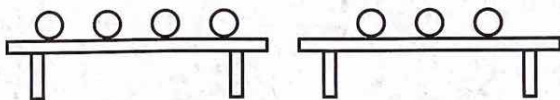
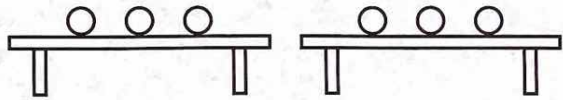
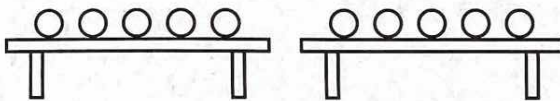
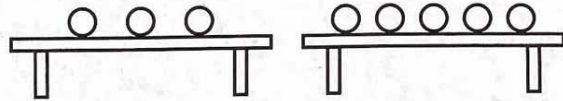


1. Write the number of balls on each table. Write = if the tables have the same number. Write \neq if they do not have the same number.


a) 
 4 \neq 3

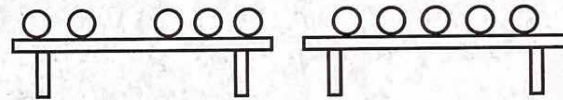
b) 
 ___ \square ___

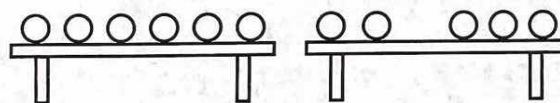
c) 
 ___ \square ___

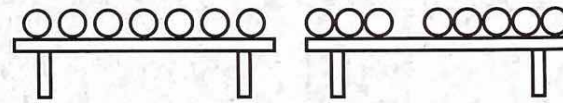
d) 
 ___ \square ___

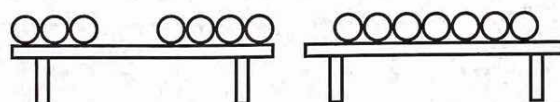
2. Write the number of balls. Write = or \neq in the box.

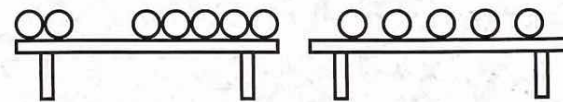
a) 
 1 + 3 \square 4

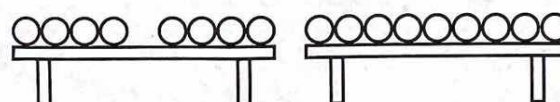
b) 
 ___ + ___ \square ___


c) 
 ___ \square ___ + ___

d) 
 ___ \square ___ + ___

e) 
 ___ + ___ \square ___

f) 
 ___ + ___ \square ___

g) 
 ___ + ___ \square ___

h) 
 ___ \square ___ + ___

3. Circle the correct addition sentence.

a) $7 = 3 + 4$

$7 \neq 3 + 4$

b) $9 = 5 + 3$

$9 \neq 5 + 3$

c) $8 = 6 + 2$

$8 \neq 6 + 2$

d) $5 = 3 + 1$

$5 \neq 3 + 1$

e) $11 + 5 = 16$

$11 + 5 \neq 16$

f) $12 + 3 = 15$

$12 + 3 \neq 15$

An **equation** is a number sentence that has an **equal sign** (=).

$$3 + 5 = 8$$



equal sign

The equal sign shows that the left side of the number sentence has the same value as the right side.

4. Circle the number sentences that are equations.

A. $5 + 7 \neq 13$

B. $6 < 9$

C. $15 - 2 = 13$

D. $4 = 32 \div 8$

E. $6 \times 5 > 15$

F. $14 \neq 12 + 3$

5. Write "T" if the equation is true. Write "F" if the equation is false.

a) $3 + 7 = 10$ T

b) $9 + 4 = 12$ F

c) $2 + 17 = 18$

d) $6 - 2 = 4$

e) $24 - 5 = 19$

f) $25 - 13 = 11$

g) $3 \times 9 = 27$

h) $6 \times 7 = 42$

i) $56 = 8 \times 8$

j) $24 \div 4 = 8$

k) $12 \div 3 = 4$

l) $6 = 35 \div 5$

m) $14 + 13 = 27$

n) $9 \times 3 = 28$

o) $9 = 45 \div 5$

p) $18 - 12 = 7$

q) $4 = 15 - 10$

r) $8 = 80 \div 10$

BONUS ►

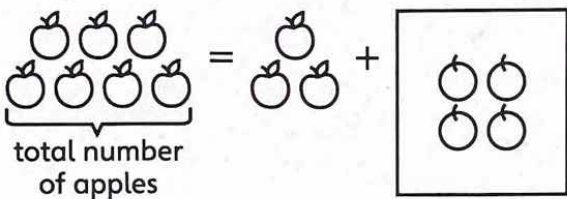
s) $2 + 4 = 3 \times 2$

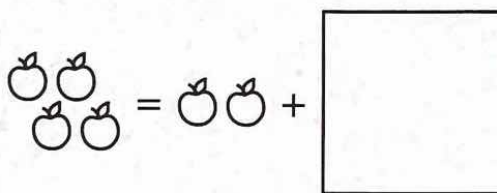
t) $5 + 6 = 14 - 2$

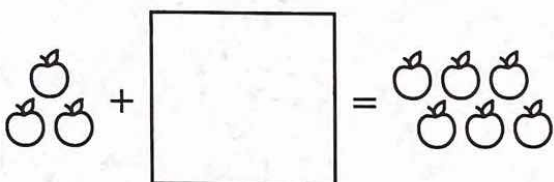
u) $24 \div 6 = 10 - 6$

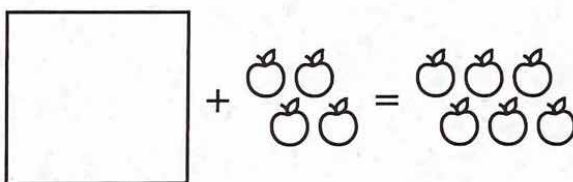
PA3-17 Addition Equations

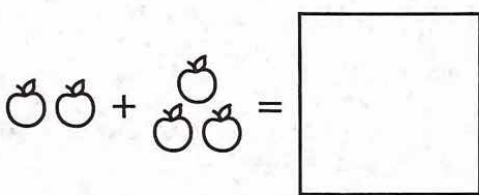
1. Some apples are inside the box and some are outside. Draw the missing apples in the box.

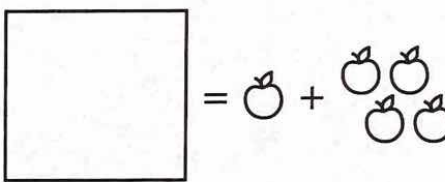
a) 

b) 

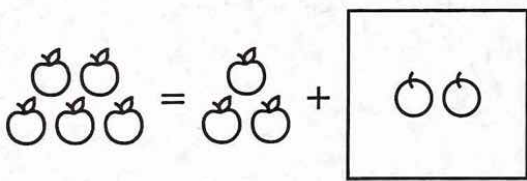
c) 

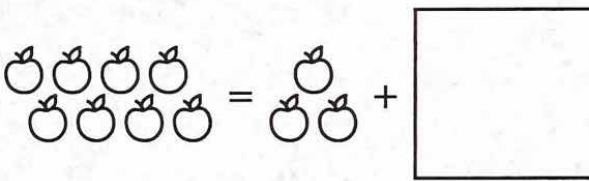
d) 

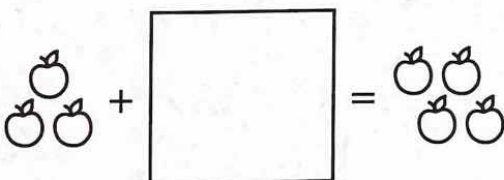
e) 

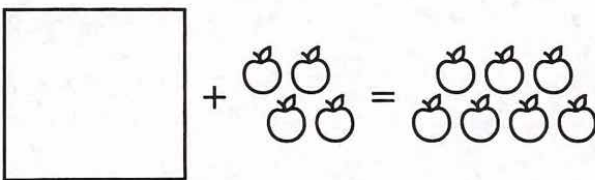
f) 

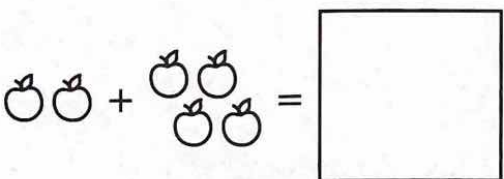
2. Draw the missing apples in the box. Then write the missing number in the smaller box.

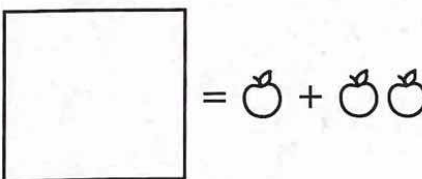
a) 
 $5 = 3 + \boxed{2}$

b) 
 $8 = 3 + \boxed{}$

c) 
 $3 + \boxed{} = 4$

d) 
 $\boxed{} + 4 = 7$

e) 
 $2 + 4 = \boxed{}$

f) 
 $\boxed{} = 1 + 2$

When you find the missing number in the equation, you **solve** it.

3. Draw a picture for the equation. Use your picture to solve the equation.

a) $5 + \square = 6$

b) $\square + 4 = 9$

c) $8 = \square + 3$

d) $\square = 4 + 4$

To solve $\square + 3 = 7$, Megan guesses the unknown number is 3.

Megan checks her guess. $\square + 3 = 7$ is not true.

6 is too small. To make a bigger sum, she tries 4.

Megan checks her new guess. $\square + 3 = 7$ is true, so the unknown number is 4.

4. Solve the equation by guessing and checking.

a) $\square + 3 = 4$

b) $2 + \square = 9$

c) $9 = \square + 4$

d) $10 = 6 + \square$

e) $5 + 7 = \square$

f) $\square = 7 + 6$

g) $15 = 9 + \square$

h) $\square + 8 = 16$

You can write 2 addition equations and 2 subtraction equations for this picture.



$3 + 4 = 7$

$4 + 3 = 7$

$7 - 3 = 4$

$7 - 4 = 3$

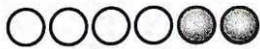
These equations make a **fact family**.

5. Write the fact family for the picture.



6. Draw a picture for the equation. Write the rest of the fact family.

a) $4 + 2 = 6$



2 + 4 = 6, 6 - 2 = 4,
6 - 4 = 2

b) $6 + 1 = 7$

c) $6 - 1 = 5$

d) $9 - 4 = 5$

Some circles are in a box. ○○○

There are 8 circles in total. Anton wants to find how many circles are in the box.

He writes the equation $3 + \square = 8$.

Anton subtracts to find the number of circles in the box: $8 - 3 = \boxed{5}$



7. Draw a picture for the equation. Then write the subtraction to find the missing number.

a) $7 + \square = 9$



9 - 7 = 2

b) $3 + \square = 10$

c) $\square + 4 = 8$

d) $5 = \square + 1$

8. Write the subtraction equation to find the missing number.

a) $7 = 4 + \square$

7 - 4 = 3

b) $10 = \square + 3$

c) $\square + 6 = 11$

d) $10 + \square = 19$

+ 21 = 32

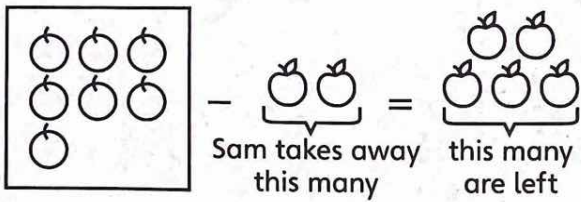
42 + = 95

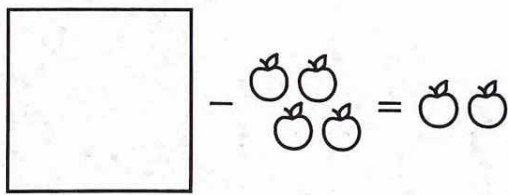
69 = + 14

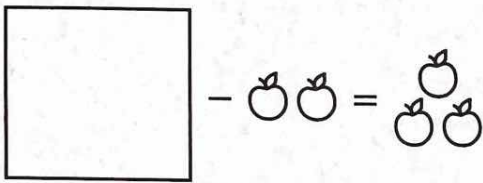
80 = 36 +

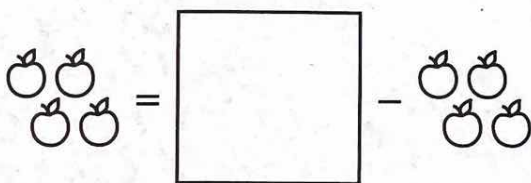
PA3-18 Subtraction Equations

1. Sam takes some apples from a box. Draw the apples that were in the box before.

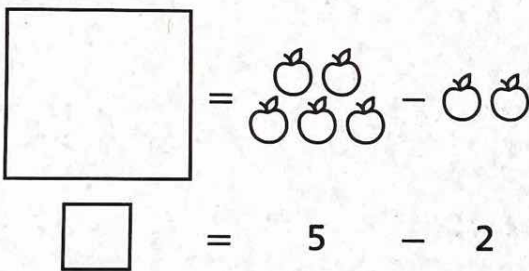
a) 

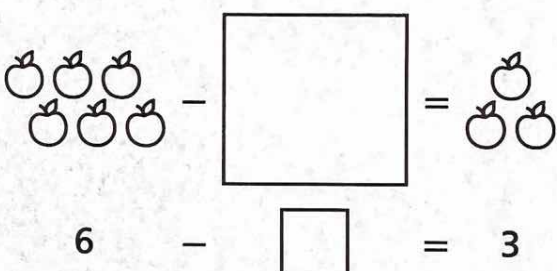
b) 

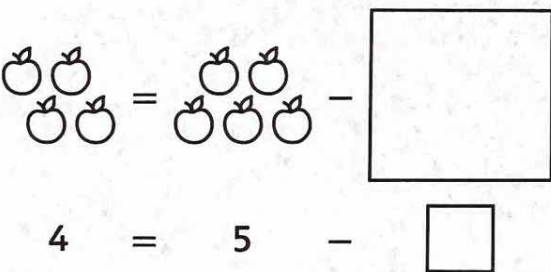
c) 

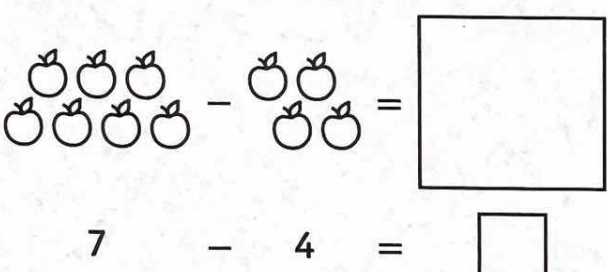
d) 

2. Draw the missing apples. Then write the missing number in the smaller box.

a) 

b) 

c) 

d) 

3. Draw a picture for the equation. Use your picture to solve the equation.

a) $6 - \square = 1$

b) $3 = \square - 6$

4. Solve the equation by guessing and checking.

- a) $\square - 2 = 2$ b) $3 = \square - 4$ c) $8 - 3 = \square$ d) $\square = 10 - 2$
 e) $9 - \square = 2$ f) $3 = 10 - \square$ g) $8 = \square - 2$ h) $15 - 7 = \square$
 i) $\square - 8 = 10$ j) $13 = \square - 4$ k) $28 - 13 = \square$ l) $7 = \square - 9$
 m) $16 - \square = 8$ n) $8 = 15 - \square$ o) $8 = \square - 6$ p) $20 - \square = 20$

Lela takes 3 apples from a box. 2 apples are left in the box.

$$\square - \text{○○○} = \text{○○}$$

$$\square - 3 = 2$$

Lela adds the number of apples she took out and the number of apples left to find the number of apples that started in the box.

$$3 + 2 = \boxed{5}$$

$$\text{○○○} + \text{○○} = \boxed{\text{○○○○○}}$$

5. Write an addition equation to find the number of apples that were in the box before.

- a) $4 = \square - 3$ b) $\square - 1 = 8$ c) $10 = \square - 3$ d) $6 = \square - 4$
 $3 + 4 = 7$ _____ _____ _____
 e) $\square - 6 = 6$ f) $\square - 9 = 4$ g) $9 = \square - 7$ h) $\square - 10 = 9$
 _____ _____ _____ _____
 i) $\square - 16 = 6$ j) $\square - 23 = 14$ k) $19 = \square - 27$ l) $\square - 10 = 75$
 _____ _____ _____ _____
 m) $\square - 21 = 32$ n) $\square - 42 = 40$ o) $61 = \square - 11$ p) $80 = \square - 50$
 _____ _____ _____ _____

REMINDER ▶ You can write a fact family for this picture.



$$2 + 3 = 5, 3 + 2 = 5, 5 - 3 = 2, 5 - 2 = 3$$

6. Write the rest of the equations in the fact family.

a) $6 - 2 = 4$, _____

b) $10 - 7 = 3$, _____

7. Write the other subtraction equation from the same fact family.

a) $11 - 3 = 8$

b) $12 - 7 = 5$

c) $17 - 9 = 8$

_____ $11 - 8 = 3$ _____

To find the missing number in $7 - \square = 4$, use $7 - 4 = \square$.

We know $7 - 4 = 3$, so $7 - \boxed{3} = 4$.

8. Write the other subtraction equation from the same fact family.

Find the number in the box.

a) $7 - \square = 5$

_____ $7 - 5 = \boxed{2}$ _____

b) $9 - \square = 4$

_____ = \square

c) $10 - \square = 2$

_____ = \square

d) $12 - \square = 5$

_____ = \square

e) $14 - \square = 6$

_____ = \square

f) $17 - \square = 10$

_____ = \square

g) $32 - \square = 25$

h) $26 = 54 - \square$

i) $17 = 97 - \square$

9. Solve the equation.

a) $\square - 33 = 32$

b) $42 - \square = 40$

c) $71 = \square - 14$

d) $80 = 90 - \square$

e) $\square = 36 - 28$

f) $78 - 29 = \square$

g) $34 = \square - 7$

h) $\square - 40 = 15$

i) $\square = 67 - 39$

BONUS ▶

j) $100 - \square = 51$

k) $71 = \square - 29$

l) $\square - 100 = 0$

PA3-19 Using Letters for Unknown Numbers

You can use a letter to stand for the number you do not know.

Instead of $\square + 5 = 8$, you can write $x + 5 = 8$ or $a + 5 = 8$.

1. Use x instead of the box. Rewrite the equation.

a) $\square + 35 = 70$

b) $24 = \square - 6$

c) $\square = 7 + 59$

2. Use y instead of the box. Rewrite the equation.

a) $45 = 90 - \square$

b) $102 = \square + 6$

c) $97 - 69 = \square$

REMINDER ▶ You can use addition to find the missing total.

$$x - 5 = 1$$

$$5 + 1 = 6$$

$$x = 6$$

You can use subtraction to find the missing part.

$$6 - a = 4$$

$$6 - 4 = 2$$

$$a = 2$$

$$2 + y = 8$$

$$8 - 2 = 6$$

$$y = 6$$

3. Solve the equation.

a) $44 - x = 20$

$$44 - 20 = 24$$

$$x = 24$$

b) $24 - 6 = n$

$$n = \underline{\quad}$$

c) $15 = 7 + m$

$$m = \underline{\quad}$$

d) $y - 28 = 10$

$$y = \underline{\quad}$$

e) $24 = 6 + b$

$$b = \underline{\quad}$$

f) $35 = x - 7$

$$x = \underline{\quad}$$

4. How many numbers can you find that solve the equation $\square + 5 = 12$?

Explain.

5. Rewrite the equation so there is only one operation. Solve the equation.

a) $25 + 3 = 15 + y$

$28 = 15 + y$

$28 - 15 = 13$

$y = 13$

b) $4 + 24 + n = 70$

c) $x - 10 = 35 + 4$

d) $35 - 10 = b - 15$

e) $p + 12 = 33 - 5$

BONUS ▶ $40 - a = 5 \times 4$

You can also use symbols, such as ☺ or ?, to stand for unknown numbers. Instead of $\square - 5 = 8$ or $x - 5 = 8$, you can write $\text{☺} - 5 = 8$ or $? - 5 = 8$.

6. Use ☺ instead of a . Rewrite the equation.

a) $44 - a = 20$

b) $25 - 6 = a$

c) $35 = 7 + a$

7. Solve the equation.

a) $? - 8 = 10$

b) $13 = 8 + \star$

c) $11 = \text{☺} - 7$

? = _____

★ = _____

☺ = _____

d) $29 - ? = 19$

e) $50 = \text{☹} + 25$

BONUS ▶ $75 = \text{▽} + 75$

? = _____

☹ = _____

▽ = _____

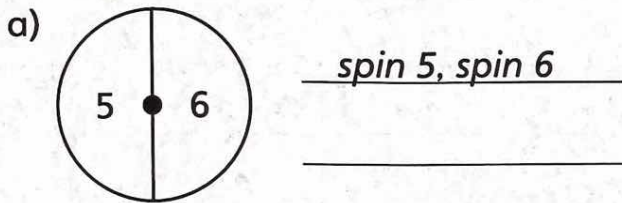
BONUS ▶ Use the same number instead of ☺. Can you find more than one solution to the equation $\text{☺} + 0 = \text{☺}$? Explain.

PDM3-12 Outcomes

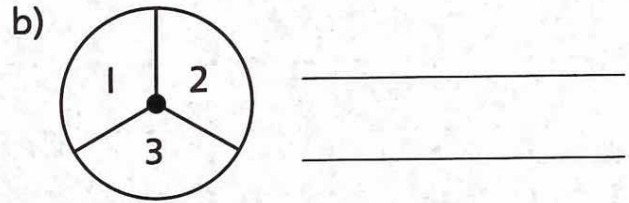
When you roll a die, spin a spinner, or play a game, the results are called **outcomes**. Alice plays a game of cards with a friend. There are three possible outcomes:

1. Alice wins.
2. Alice loses.
3. There is a **tie** or **draw**. The game ends and nobody wins or loses.

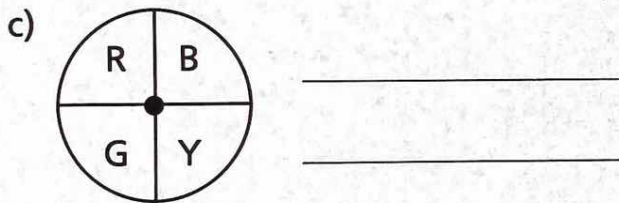
1. List all the possible outcomes of spinning the spinner. How many outcomes are there in total?



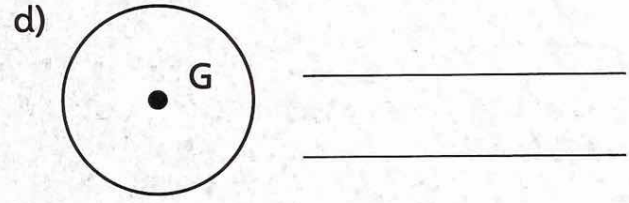
Number of outcomes: 2



Number of outcomes: _____



Number of outcomes: _____

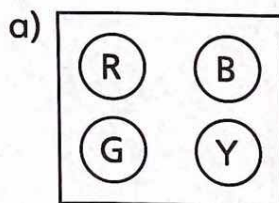


Number of outcomes: _____

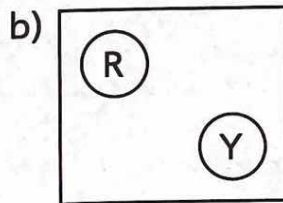
2. Fill in the table.

	Possible Outcomes	Number of Outcomes
a) tossing a coin	<i>heads, tails</i>	2
b) rolling a regular die		
c) playing soccer		

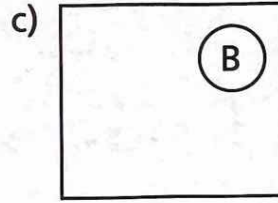
3. You take a ball out of the box. How many outcomes are there?



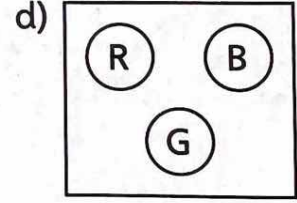
_____ outcomes



_____ outcomes



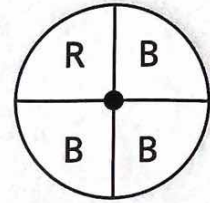
_____ outcomes



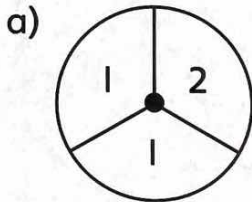
_____ outcomes

Spinning the spinner has four outcomes:

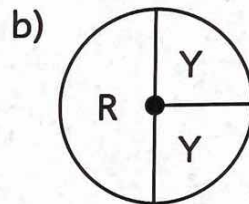
1. The pointer lands in the blue region at top right.
2. The pointer lands in the blue region at bottom right.
3. The pointer lands in the blue region at bottom left.
4. The pointer lands in the red region.



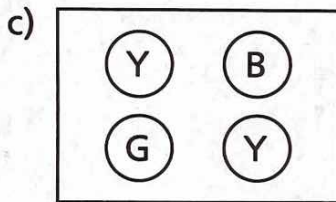
4. How many outcomes are there in total when you spin the spinner or take a ball from the box?



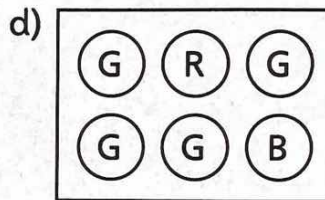
_____ outcomes



_____ outcomes



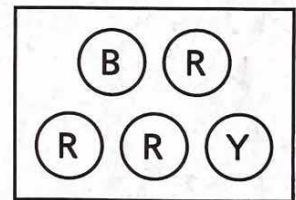
_____ outcomes



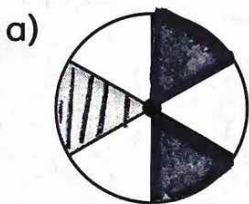
_____ outcomes

5. a) How many outcomes are there when taking a marble out of the box without looking? _____

b) How many outcomes are there of taking out a red marble? _____

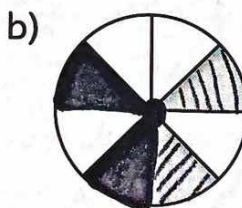


6. How many outcomes does the spinner have? How many outcomes are there of spinning white?



Number of outcomes: _____

Number of white outcomes: _____



Number of outcomes: _____

Number of white outcomes: _____