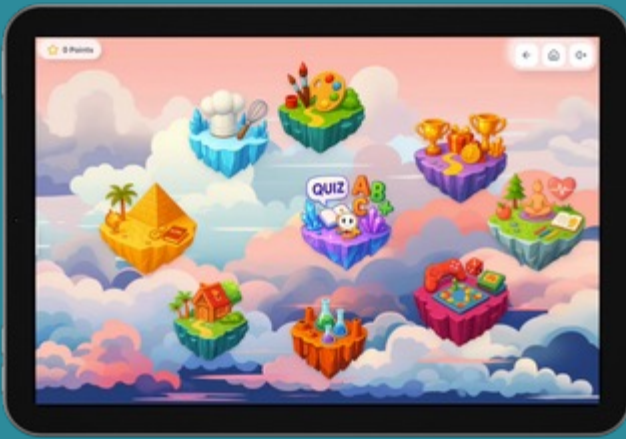


Homework without the hassle

Sukindi is an Australian learning platform that supports Teachers, Parents and Students with an interactive homework app and downloadable resources.



Scan to start your
free 7-day trial

www.sukindi.com.au



Chance and Probability – Year 3

Table of Contents	
Presentation: Chance And Probability Yr 3	
Classroom Display: Chance and Probability	
Activity: Chance Event Sort	
Game 1: Chance Race	
Game 2: Bank or Bust	
Game 3: Mystery Bag Challenge	
Worksheet 1: Chance Words in Context	
Worksheet 2: Fair Coins, Different Results	
Worksheet 3: Roll, Tally and Compare	
Worksheet 4: Spinner Sleuths	
Worksheet 5: Mystery Bag Reasoning	
Worksheet 6: Chance Challenge	
Quiz: Chance And Probability Yr 3	
Assessment: School Fête Chance Investigation	
Rubric: Chance And Probability Yr 3 Rubric	



CHANCE LANGUAGE LADDER

Use clues to describe how likely an event is.

5



CERTAIN
will happen

The next day comes after today.

4



LIKELY

will probably happen
A student in our class will use
a pencil today.

3



EVEN CHANCE

two outcomes are equally likely
A fair coin will land on heads.

2



UNLIKELY

could happen, but probably won't
I will roll a 6 three times in a row.

1



IMPOSSIBLE

cannot happen

The sun will rise in the west.



Chance describes what might happen.
It does not guarantee the next result.

CHANCE EXPERIMENT CYCLE

Predict, repeat and learn from the results.



POSSIBLE OUTCOMES

Everything that could happen.



INDEPENDENT TRIALS

One result does not control the next.



CHANCE EVENT SORT

Read, reason, sort and explain.

HOW TO PLAY

1. Cut out the event cards and place them face down.
2. Take one card and read the event aloud.
3. Choose: impossible, unlikely, even chance, likely or certain.
4. Place the card on the sorting mat.
5. Explain your reasoning. Partner may agree or disagree.

MATERIALS

15 event cards • sorting mat



CHANCE TALK

I think this event is _____ because _____.

The possible outcomes are _____.

We agree / disagree because _____.



CHECK YOUR THINKING



Can it happen? • What are the possible outcomes? • Are the outcomes equally likely?

CHANCE EVENT SORT

Place each card where it belongs.

IMPOSSIBLE



UNLIKELY



EVEN CHANCE



LIKELY



CERTAIN



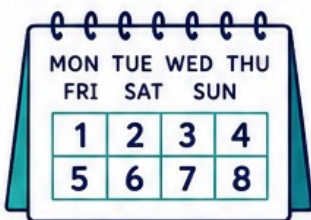
Be ready to explain your reasoning.

CHANCE EVENT CARDS

Cut along the dotted lines. Read each card aloud.



A fair coin will land on heads.



A week will have eight days.



I will roll a number greater than 1 on a fair die.



A randomly chosen month begins with J.



Tomorrow comes after today.



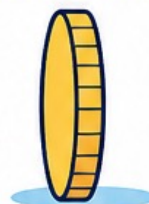
I will pick a red counter from a bag with 4 red and 4 yellow.



A square will have four sides.



A randomly chosen month has 31 days.



A coin will land standing on its edge.



A six-sided die will show a number from 1 to 6.



A spinner with half red and half blue lands on blue.



It will be light outside at lunchtime.



I will roll a 7 on a six-sided die.



A day will have 24 hours.



I will roll a 6 on one fair die.

CHANCE RACE

Rules and spinner

MATERIALS

game board • 2 counters •
paperclip • pencil • tally paper

HOW TO PLAY

1. Place both counters on START. Make a tally for teal, blue, yellow and coral.
2. Take turns. Predict a colour, then spin.
3. Record the colour in your tally.
4. Move using the spinner key.
5. If you land on a check point, follow its prompt.
6. The first player to FINISH wins.

CHECK POINTS



PREDICT: Predict the next colour. If correct, move 1 extra space.



TALLY: Say the total for the colour you just spun.



COMPARE: Which colour has appeared most? Which has appeared least?



SPINNER KEY

-  **TEAL** — move 1
-  **BLUE** — move 2
-  **YELLOW** — move 3
-  **CORAL** — move 1

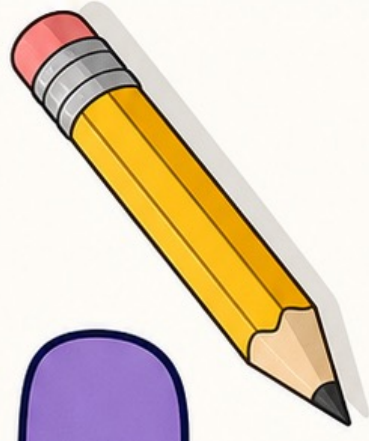
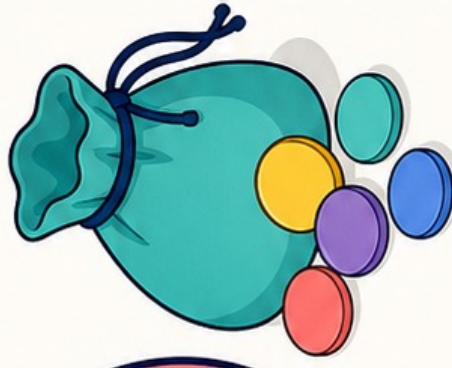
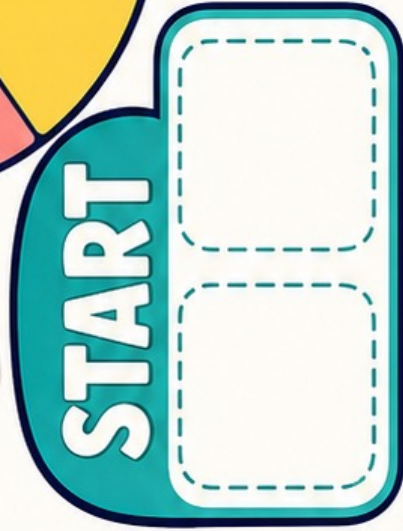
AFTER THE GAME



Were your results exactly the same as another game? Why can results vary? Was the game fair? Explain.

CHANCE RACE

Spin, move a token and talk about the results.



BANK OR BUST

≡ A push-your-luck dice game ≡

MATERIALS

1 fair six-sided die • score sheet • pencil • 2–4 players



BEFORE YOU ROLL

Predict: Will you roll a 1 or not a 1?

Explain: What outcome is most likely? How do you know?



HOW TO PLAY

1 Choose a starting player. Play three rounds.

2 On your turn, roll the die.

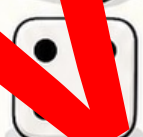
3 If you roll 2, 3, 4, 5 or 6, add it to your round score.

4 Choose: **BANK** your round score or **ROLL AGAIN**

5 If you roll a 1, **BUST!** You lose the round score and your turn ends.

6 If you **BANK**, add the round score to your total and end your turn.

7 After three rounds, the highest total wins.



CHANCE CHECK

Possible outcomes:

1, 2, 3, 4, 5, 6



Each number is equally likely on a fair die.



The previous roll does not change the next roll.



Why might two games finish with different totals?





BANK OR BUST



Score Sheet



Group: _____

Date: _____

PLAYER 1: _____	
Round 1	
Round 2	
Round 3	
TOTAL	

PLAYER 2: _____	
Round 1	
Round 2	
Round 3	
TOTAL	

PLAYER 3: _____	
Round 1	
Round 2	
Round 3	
TOTAL	

PLAYER 4: _____	
Round 1	
Round 2	
Round 3	
TOTAL	



GROUP DIE TALLY



1	2	3	4	5	6
Total	Total	Total	Total	Total	Total



CHANCE REFLECTION



1. Which number appeared most? _____
2. Which number appeared least? _____
3. Did every number appear? _____
4. Why might the totals change in the next game? _____





MYSTERY BAG CHALLENGE CARDS



Build a bag that makes every clue true.



1

Use 8 counters.
Make blue
most likely.



2

Use 6 counters.
Make red
impossible.



3

Use 8 counters.
Give yellow and
green an equal
chance.



4

Use 10 counters.
Make purple
least likely but
still possible.



5

Use 5 counters.
Make orange
certain.



6

Use 9 counters.
Make red more
likely than blue.



7

Use 10 counters and
3 colours. No
colour has an
equal chance.



8

Use 10 counters
and 2 colours.
Give both colours
an equal chance.



9

Use 8 counters.
Make green
most likely and
yellow impossible.



10

Use 12 counters.
Make blue
unlikely but
still possible.



11

Use 10 counters.
Red, blue and
yellow are possible.
Red is most likely.



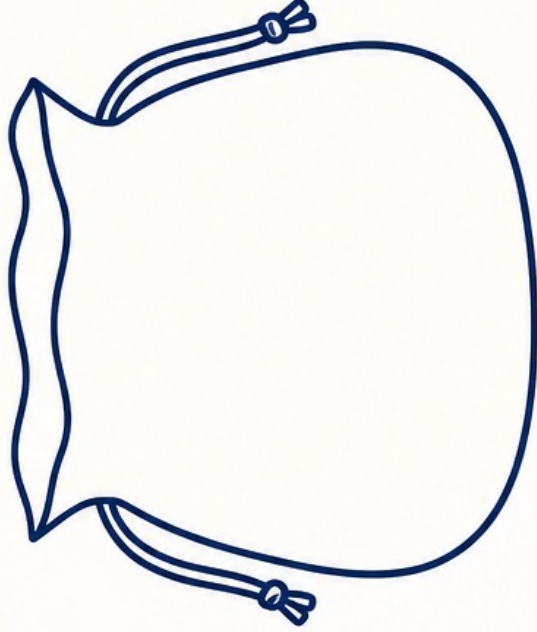
12

Create your own
challenge. Write
three clues, then
trade with a partner.

●●● MYSTERY BAG CHALLENGE ●●●

Build each bag with counters. Make every clue true.

BAG A



- Red is most likely.
- Blue is least likely.
- Red, blue and yellow are all possible.

Counters used: _____

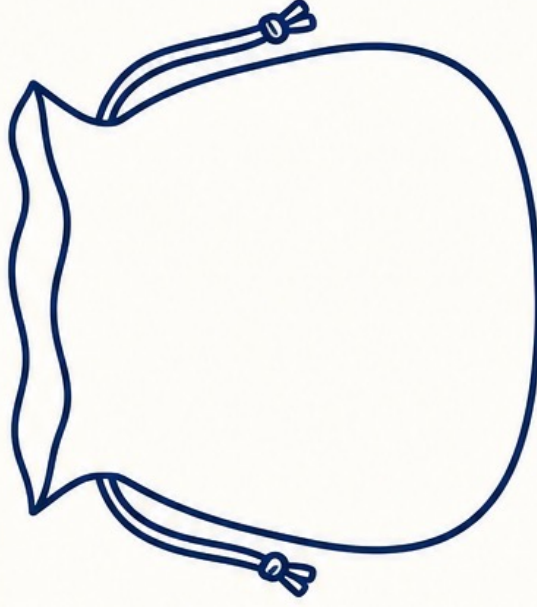
BAG B



- Yellow and green have an equal chance.
- Red is impossible.

Counters used: _____

BAG C



- Use exactly 10 counters.
- Purple is more likely than orange.
- White is least likely.

Counters used: _____

PARTNER CHECK

Could another bag also fit the clues? Explain how the bags could be different.

CHANCE WORDS IN CONTEXT

Worksheet 1 • Page 1

Name: _____ Date: _____

A. Circle the chance word that best describes each event.

1. A fair coin lands on heads.



impossible

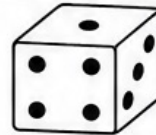
unlikely

even chance

likely

certain

2. A fair six-sided die shows a 7.



impossible

unlikely

even chance

likely

certain

3. A fair six-sided die shows a number less than 6.



impossible

unlikely

even chance

likely

certain

4. A spinner has 8 equal sections.
Only 1 section is purple. It lands on purple.



impossible

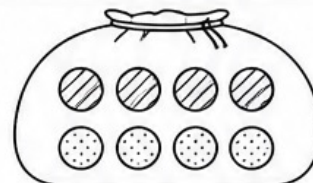
unlikely

even chance

likely

certain

5. A bag has 10 red counters and 10 blue counters.
A counter is drawn at random.



red

blue

impossible

unlikely

even chance

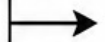
likely

certain

6. Tomorrow comes after today.

today

tomorrow



impossible

unlikely

even chance

likely

certain

B. Explain your reasoning.

7. Why is Event 2 impossible?

8. Why is Event 3 likely?

Use the possible outcomes as evidence.

CHANCE WORDS IN CONTEXT

Worksheet 1 • Page 1

Name: _____ **ANSWERS** _____ Date: _____

A. Circle the chance word that best describes each event.

1. A fair coin lands on heads.



impossible

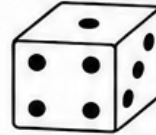
unlikely

even chance

likely

certain

2. A fair six-sided die shows a 7.



impossible

unlikely

even chance

likely

certain

3. A fair six-sided die shows a number less than 6.



impossible

unlikely

even chance

likely

certain

4. A spinner has 8 equal sections.
Only 1 section is purple. It lands on purple.



impossible

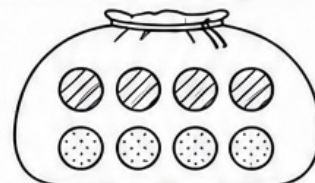
unlikely

even chance

likely

certain

5. A bag has 4 red counters and 4 blue counters.
A counter is drawn at random.



red

blue

impossible

unlikely

even chance

likely

certain

6. Tomorrow comes after today.

today

tomorrow



impossible

unlikely

even chance

likely

certain

B. Explain your reasoning.

7. Why is Event 2 impossible?

A fair six-sided die can only show 1, 2, 3, 4, 5 or 6. Seven is not a possible outcome.

8. Why is Event 3 likely?

Five of the six outcomes—1, 2, 3, 4 and 5—are less than 6.

Use the possible outcomes as evidence.

CHANCE WORDS IN CONTEXT

Worksheet 1 • Page 2

Name: _____

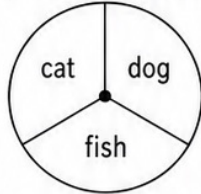
Date: _____

A. List the possible outcomes.

1. Toss a fair coin.

2. Roll a fair six-sided die.

3. Spin a fair spinner labelled cat, dog and fish.



4. Draw one counter from a bag containing red, blue and green counters.



red



blue



green

B. Create and compare events.

5. Write an impossible event for a fair six-sided die.

6. A bag has 5 yellow counters and 1 green counter. Write an event.



yellow



yellow



yellow



yellow

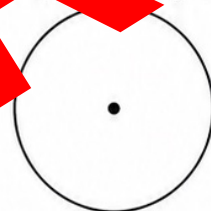


yellow



green

7. Draw a spinner that gives red and blue an even chance.



red



blue

8. Order these events from least likely to most likely.

A. Roll a 6
on a fair die.

B. Toss heads
on a fair coin.

C. Roll a number
less than 6 on a
fair die.

least likely



middle



most likely

C. Explain.

9. Is unlikely the same as impossible? Explain.

10. A coin landed on heads three times. Is tails certain next? Explain.

Chance describes likelihood, not a guarantee.

CHANCE WORDS IN CONTEXT

Worksheet 1 • Page 2

Name: _____

ANSWERS

Date: _____

A. List the possible outcomes.

1. Toss a fair coin.

heads

tails

2. Roll a fair six-sided die.

1

2

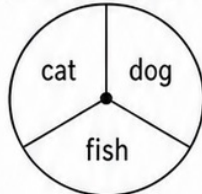
3

4

5

6

3. Spin a fair spinner labelled cat, dog and fish.



cat

dog

fish

4. Draw one counter from a bag containing red, blue and green counters.



red



blue



green

red

blue

green

B. Create and compare events.

5. Write an impossible event for a fair six-sided die.

Example: roll a 7.

6. A bag has 5 yellow counters and 1 green counter. Write a likely event.



yellow



yellow



yellow



yellow



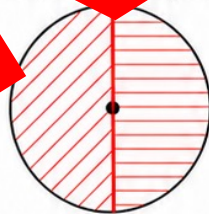
yellow



green

Draw a yellow counter.

7. Draw a spinner that gives red and blue an even chance.



red



blue

8. Order these events from least likely to most likely.

A. Roll a 6 on a fair die.

B. Toss heads on a fair coin.

C. Roll a number less than 6 on a fair die.

A

B

C

C. Explain.

9. Is unlikely the same as impossible? Explain.

No. Unlikely can happen; impossible cannot happen.

10. A coin landed on heads three times. Is tails certain next? Explain.

No. The next toss is independent; heads and tails remain equally likely.

FAIR COINS, DIFFERENT RESULTS

Worksheet 2 • Page 1

Name: _____

Date: _____

A. BEFORE YOU TOSS

1. List the two possible outcomes of a coin toss.

2. Predict the results of 20 tosses.

☐

more heads

☐

more tails

☐

close to equal

Why? _____

B. TOSS AND RECORD

Toss a fair coin 20 times. Circle H or T for each result.

1 H T	2 H T	3 H T	4 H T	5 H T
6 H T	7 H T	8 H T	9 H T	10 H T
11 H T	12 H T	13 H T	14 H T	15 H T
16 H T	17 H T	18 H T	19 H T	20 H T

C. COUNT YOUR RESULTS

HEADS	Tally	Total: _____
TAILS	Tally	Total: _____

Heads total + tails total = _____

D. REFLECT

3. Which outcome occurred more, or were they equal?

4. Was your prediction correct? Explain.

5. Were the results exactly 10 heads and 10 tails? ☐ yes ☐ no

6. If you repeat the experiment, will the results be exactly the same? Explain.

A fair coin gives heads and tails an equal chance, but small sets of results can vary.

FAIR COINS, DIFFERENT RESULTS

Worksheet 2 • Page 1

Name: **ANSWERS**

Date: _____

A. BEFORE YOU TOSS

1. List the two possible outcomes of a coin toss.

heads

tails

2. Predict the results of 20 tosses.

☐

more heads

☐

more tails

☒

close to equal

Why? **Reasonable prediction: a fair coin gives both outcomes an equal chance.** _____

B. TOSS AND RECORD

Toss a fair coin 20 times. Circle H or T for each result.

RESULTS WILL VARY

1 H T	2 H T	3 H T	4 H T	5 H T
6 H T	7 H T	8 H T	9 H T	10 H T
11 H T	12 H T	13 H T	14 H T	15 H T
16 H T	17 H T	18 H T	19 H T	20 H T

C. COUNT OUR RESULTS

HEADS	Tally varies	Total: <u>varies</u>
TAILS	Tally varies	Total: <u>varies</u>

Heads total + tails total = 20

D. REFLECT

3. Which outcome occurred more, or were they equal?

Results will vary.

4. Was your prediction correct? Explain.

Answers will vary.

5. Were the results exactly 10 heads and 10 tails?

☐

yes

☐

no

Results will vary.

6. If you repeat the experiment, will the results be exactly the same? Explain.

Not necessarily. Repeated chance experiments can have different results.

A fair coin gives heads and tails an equal chance, but small sets of results can vary.

FAIR COINS, DIFFERENT RESULTS

Worksheet 2 • Page 2

Name: _____

Date: _____

A. COMPARE TWO FAIR-COIN TRIALS

Each group tossed the same fair coin 20 times.

TRIAL A

1	2	3	4	5	6	7	8	9	10
H	T	H	H	T	T	H	T	H	T
11	12	13	14	15	16	17	18	19	20
T	H	T	H	T	T	H	T	H	T

Heads: _____

Tails: _____

TRIAL B

1	2	3	4	5	6	7	8	9	10
H	H	T	H	H	T	H	T	H	T
11	12	13	14	15	16	17	18	19	20
T	H	H	T	H	H	T	H	T	H

Heads: _____

Tails: _____

- Did the two trials have the same totals? ☐ yes ☐ no
- Describe one way the results varied.

- Could both trials still come from a fair coin? Explain.

B. THINK ABOUT THE NEXT TOSS

- Trial A ended with tails. What is the chance of heads on the next toss?
☐ unlikely ☐ even chance ☐ certain
- Explain why the last result does or does not control the next result.

- A coin shows H, H, H. Is tails guaranteed next? ☐ yes ☐ no

C. USE THE EVIDENCE

- Group C recorded 10 heads and 10 tails. Are any of the three trials necessarily wrong? ☐ yes ☐ no

- Complete the sentence: Repeated chance experiments can have _____ results.

Variation is a normal part of chance experiments.

FAIR COINS, DIFFERENT RESULTS

Worksheet 2 • Page 2

Name: _____

ANSWERS

Date: _____

A. COMPARE TWO FAIR-COIN TRIALS

Each group tossed the same fair coin 20 times.

TRIAL A

1	2	3	4	5	6	7	8	9	10
H	T	H	H	T	T	H	T	H	T
11	12	13	14	15	16	17	18	19	20
T	H	T	H	T	T	H	T	H	T

Heads: 9

Tails: 11

TRIAL B

1	2	3	4	5	6	7	8	9	10
H	H	T	H	H	T	H	T	H	T
11	12	13	14	15	16	17	18	19	20
T	H	H	T	H	H	T	H	T	H

Heads: 13

Tails: 7

1. Did the two trials have the same totals? ☐ yes ☒ no

2. Describe one way the results varied.

Trial B had more heads than Trial A.

3. Could both trials still come from a fair coin? Explain.

Yes, a fair coin can still give unequal totals in a small trial.

B. THINK ABOUT THE NEXT TOSS

4. Trial A ended with tails. What is the chance of heads on the next toss?

☐ unlikely

☒ even chance

☐ certain

5. Explain why the last result does or does not control the next result.

Each toss is independent. The coin still has two equally likely outcomes.

6. A coin shows H, H, H. Is tails guaranteed next?

☐ yes

☒ no

A tail is possible, not guaranteed.

C. USE THE EVIDENCE

7. Group C recorded 10 heads and 10 tails. Are any of the three trials necessarily wrong? ☐ yes ☒ no

No. Chance results can vary, so 9/11, 13/7 and 10/10 can all occur.

8. Complete the sentence: Repeated chance experiments can have different results.

Variation is a normal part of chance experiments.

ROLL, TALLY AND COMPARE

Worksheet 3 • Page 1

Name: _____

Date: _____

A. BEFORE YOU ROLL

1. List the possible outcomes of a fair six-sided die.

--	--	--	--	--	--

2. Predict: Which number will appear most often in 30 rolls?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

Why? _____

B. ROLL AND RECORD

Roll a fair die 30 times. Write each result.

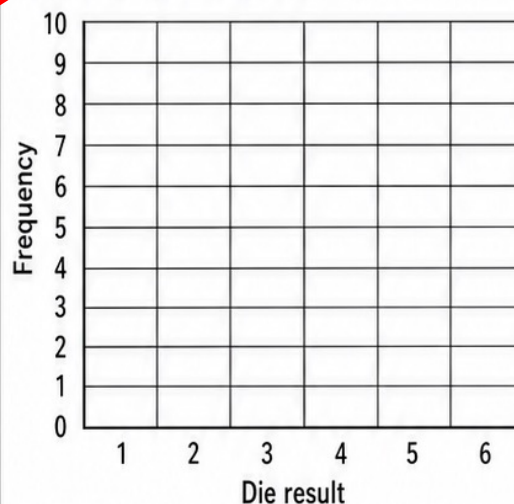
1	2	3	4	5	6	7	8	9
_____	_____	_____	_____	_____	_____	_____	_____	_____
11	12	13	14	15	16	17	18	19
_____	_____	_____	_____	_____	_____	_____	_____	_____
21	22	23	24	25	26	27	28	29
_____	_____	_____	_____	_____	_____	_____	_____	_____

C. TALLY TOTAL

Die result	Tally	Total
1		
2		
3		
4		
5		
6		

Check: all six totals add to _____

D. SHOW THE RESULTS



E. REFLECT

- Which number appeared most? _____
- Which number appeared least? _____
- Did any numbers have the same total? _____
- Were your results exactly what you predicted? Explain.

ROLL, TALLY AND COMPARE

Worksheet 3 • Page 1

Name: ANSWERS

Date: _____

A. BEFORE YOU ROLL

1. List the possible outcomes of a fair six-sided die.

1	2	3	4	5	6
---	---	---	---	---	---

2. Predict: Which number will appear most often in 30 rolls?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

Any prediction is reasonable.

Why? _____

Each number has an equal chance on a fair die.

B. ROLL AND RECORD

Roll a fair die 30 times. Write each result.

RESULTS WILL VARY

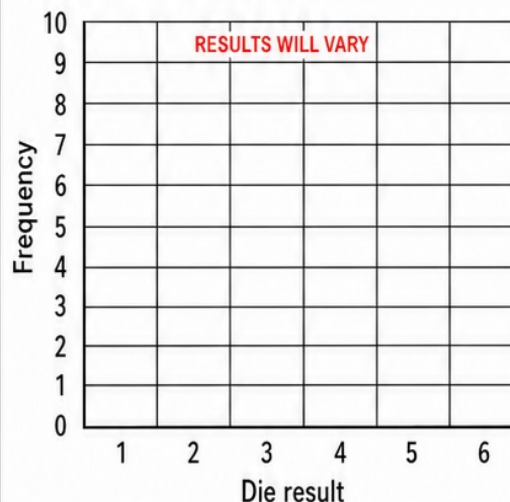
1	2	3	4	5	6	7	8	9	10
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
11	12	13	14	15	16	17	18	19	20
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
21	22	23	24	25	26	27	28	29	30
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

C. TALLY AND TOTAL

Die result	Tally	Total
1	varies	varies
2	varies	varies
3	varies	varies
4	varies	varies
5	varies	varies
6	varies	varies

Check: all six totals add to 30

D. SHOW THE RESULTS



E. REFLECT

- Which number appeared most? Results will vary.
- Which number appeared least? Results will vary.
- Did any numbers have the same total? Results will vary.
- Were your results exactly what you predicted? Explain.
Answers will vary. The totals do not need to match the prediction.

Each die result has an equal chance, but the recorded totals can vary.

ROLL, TALLY AND COMPARE

Worksheet 3 • Page 2

Name: _____

Date: _____

A. READ THE RESULTS

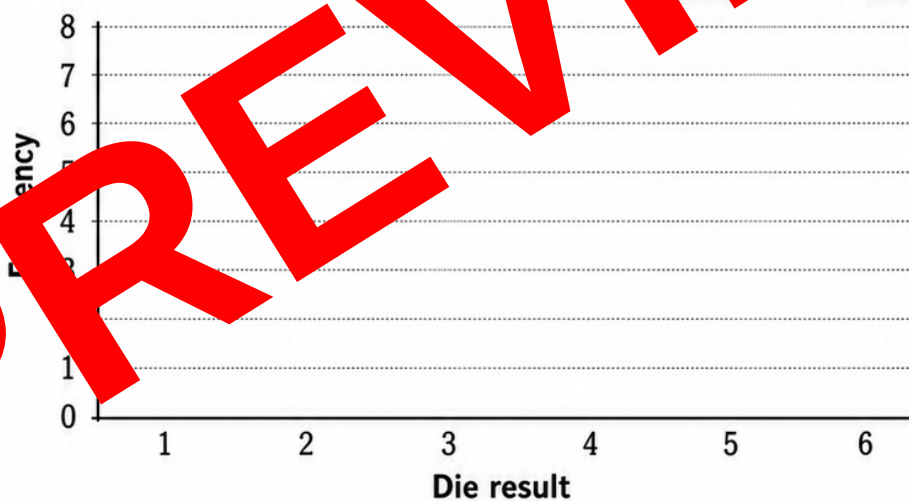
Two groups rolled the same fair six-sided die 30 times.

GROUP A	
Die result	Total
1	3
2	4
3	6
4	7
5	5
6	5
Total rolls: _____	

GROUP B	
Die result	Total
1	6
2	5
3	3
4	4
5	7
6	5
Total rolls: _____	

1. Which result appeared most in Group A? _____ Least? _____
2. Which result appeared most in Group B? _____ Least? _____
3. Which die result had the same total in both groups? _____

B. GRAPH AND COMPARE



4. Describe one way the two sets of results varied.

5. Could both groups still have used a fair die? Explain.

C. THINK ABOUT THE NEXT ROLL

6. Group B rolled a 5 three times in a row. Is 5 guaranteed next? ☐ yes ☐ no

7. What outcomes are possible on the next roll? _____
8. Complete: The previous roll does not _____ the next roll.

Repeated chance experiments can give different totals.

ROLL, TALLY AND COMPARE

Worksheet 3 • Page 2

Name: **ANSWERS**

Date: _____

A. READ THE RESULTS

Two groups rolled the same fair six-sided die 30 times.

GROUP A	
Die result	Total
1	3
2	4
3	6
4	7
5	5
6	5
Total rolls: 30	

GROUP B	
Die result	Total
1	6
2	5
3	3
4	4
5	7
6	5
Total rolls: 30	

1. Which result appeared most in Group A? **4** Least? **1**
2. Which result appeared most in Group B? **5** Least? **3**
3. Which die result had the same total in both groups? **2, 4, 6**

B. GRAPH AND COMPARE



4. Describe one way the two sets of results varied.
Example: Group A rolled 4 seven times; Group B rolled 4 four times.
5. Could both groups still have used a fair die? Explain.
Yes. Fair chance does not require equal totals in a small set of rolls.

C. THINK ABOUT THE NEXT ROLL

6. Group B rolled a 5 three times in a row. Is 5 guaranteed next? ☐ yes ☒ no
Each roll is independent.
7. What outcomes are possible on the next roll? **1, 2, 3, 4, 5 and 6**
8. Complete: The previous roll does not **control** the next roll.

Repeated chance experiments can give different totals.

SPINNER SLEUTHS

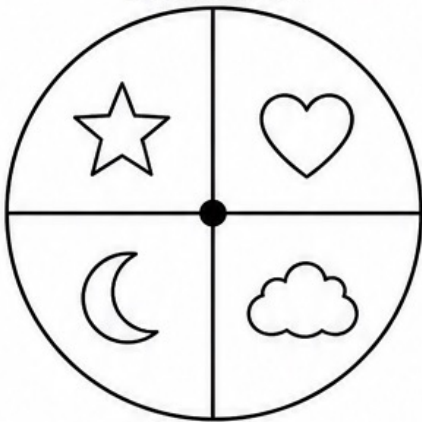
Worksheet 4 • Page 1

Name: _____

Date: _____

Study each spinner. Use the size and number of equal sections as evidence.

SPINNER A

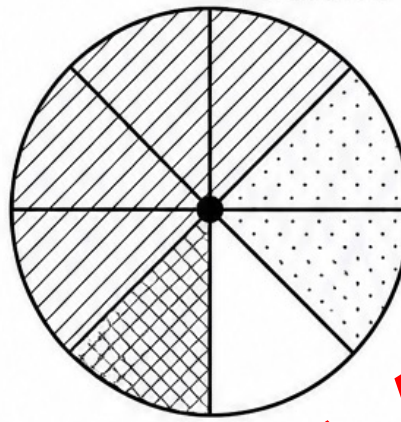


Possible outcomes: _____

Most likely: _____

Least likely: _____

SPINNER B



 red

 blue

 green

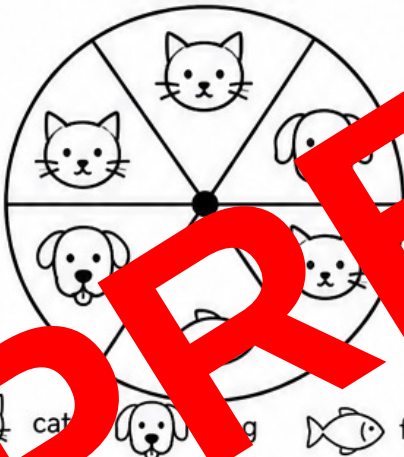
 yellow

Possible outcomes: _____

Most likely: _____

Least likely: _____

SPINNER C

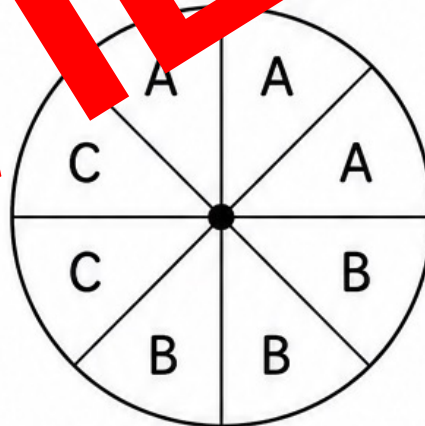


Possible outcomes: _____

Most likely: _____

Least likely: _____

SPINNER D



Possible outcomes: _____

Most likely: _____

Least likely: _____

COMPARE THE SPINNERS

1. Which spinner gives every outcome an equal chance? _____
2. On Spinner B, is red more or less likely than blue? _____
3. On Spinner C, which is more likely: dog or fish? _____
4. On Spinner D, which two outcomes have an equal chance? _____
5. Does the previous spin change the next spin? Explain.

Larger or repeated sections make an outcome more likely.

SPINNER SLEUTHS

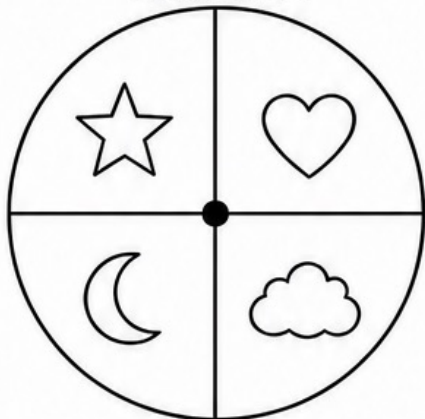
Worksheet 4 • Page 1

Name: **ANSWERS**

Date: _____

Study each spinner. Use the size and number of equal sections as evidence.

SPINNER A

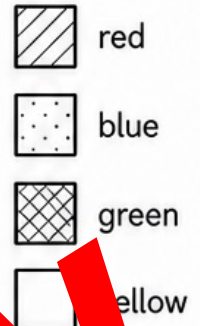
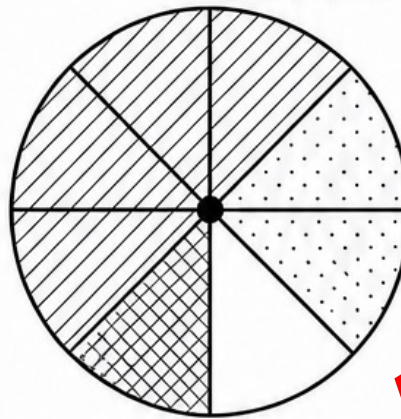


Possible outcomes: **star, heart, moon, cloud**

Most likely: **all are equally likely**

Least likely: **all are equally likely**

SPINNER B



Possible outcomes: **red, blue, green, yellow**

Most likely: **red**

Least likely: **green and yellow**

SPINNER C

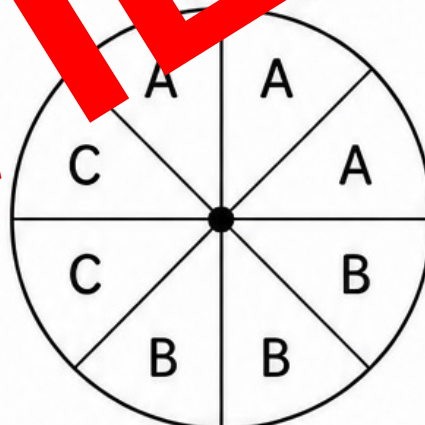


Possible outcomes: **cat, dog, fish**

Most likely: **cat**

Least likely: **fish**

SPINNER D



Possible outcomes: **A, B, C**

Most likely: **A and B**

Least likely: **C**

COMPARE THE SPINNERS

- Which spinner gives every outcome an equal chance? **A**
- On Spinner B, is red more or less likely than blue? **more likely**
- On Spinner C, which is more likely: dog or fish? **dog**
- On Spinner D, which two outcomes have an equal chance? **A and B**
- Does the previous spin change the next spin? Explain.

No. Each spin is independent; one result does not control the next.

Larger or repeated sections make an outcome more likely.

SPINNER SLEUTHS

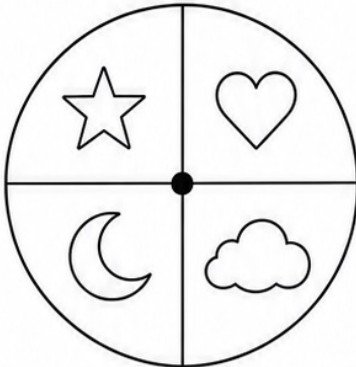
Worksheet 4 • Page 2

Name: _____

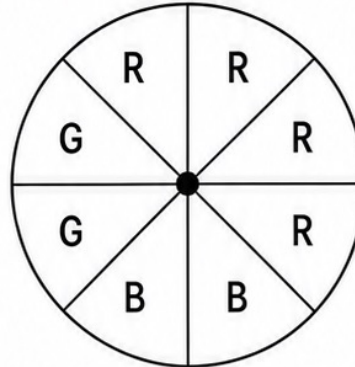
Date: _____

A. READ THE SPINNERS

SPINNER E



SPINNER F

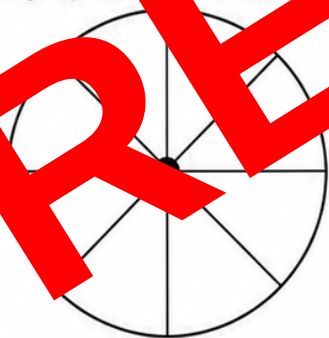


R = red
B = blue
G = green

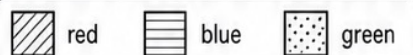
1. On Spinner E, do all outcomes have an equal chance? ☐ yes ☐ no
2. On Spinner F, which colour is most likely? _____
3. On Spinner F, do blue and green have an equal chance? ☐ yes ☐ no
4. Explain using the number of sections.

B. DESIGN TO A RULE

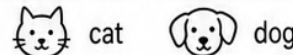
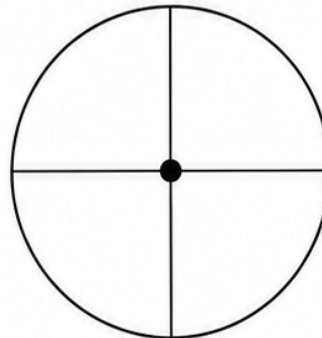
5. Design Spinner G with 8 equal sections.



- red is most likely
- blue and green have an equal chance
- red, blue and green are all possible

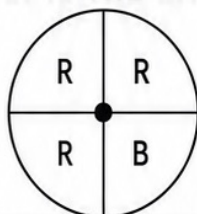


6. Design Spinner H with 4 equal sections so cat and dog have an equal chance.



Explain how your spinner matches the rule.

C. IS THE GAME FAIR?



Red wins on R.
Blue wins on B.

7. Is this game fair? ☐ yes ☐ no
8. Explain how you could make it fair.

A fair game gives each player an equal chance to win.

SPINNER SLEUTHS

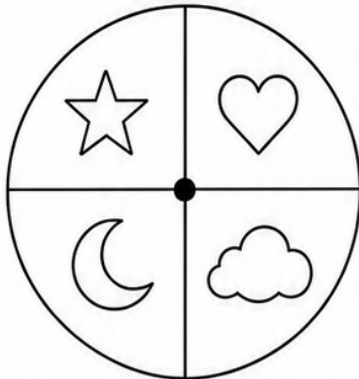
Worksheet 4 • Page 2

Name: ANSWERS

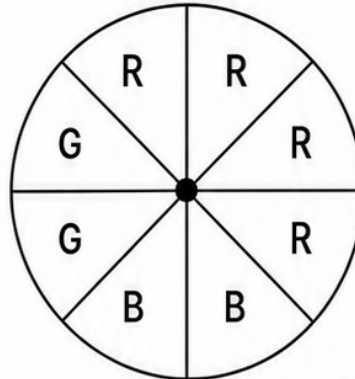
Date: _____

A. READ THE SPINNERS

SPINNER E



SPINNER F



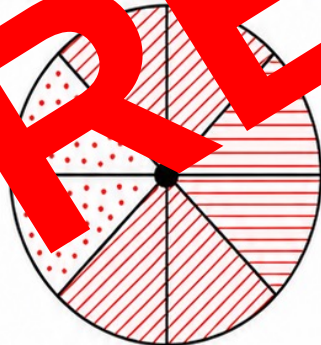
R = red
B = blue
G = green

- On Spinner E, do all outcomes have an equal chance? ☒ yes ☐ no
- On Spinner F, which colour is most likely? red
- On Spinner F, do blue and green have an equal chance? ☒ yes ☐ no
- Explain using the number of sections.

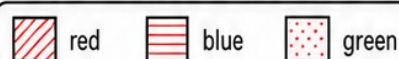
Red has 4 sections; blue and green have 2 each.

B. DESIGN TO A RULE

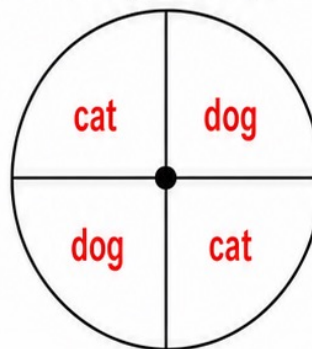
5. Design Spinner G with 8 equal sections.



- red is most likely
- blue and green have an equal chance
- red, blue and green are all possible



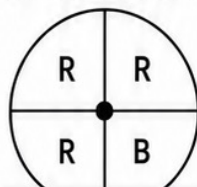
6. Design Spinner H with 4 equal sections so cat and dog have an equal chance.



Explain how your spinner matches the rule.

G has 4 red, 2 blue and 2 green. H has 2 cat and 2 dog.

C. IS THE GAME FAIR?



Red wins on R.
Blue wins on B.

- Is this game fair? ☐ yes ☒ no
- Explain how you could make it fair.

Use 2 R sections and 2 B sections.

A fair game gives each player an equal chance to win.

MYSTERY BAG REASONING

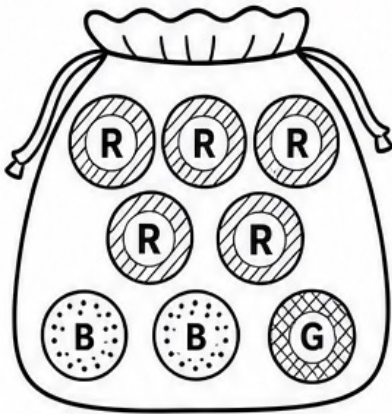
Worksheet 5 • Page 1

Name: _____

Date: _____

A. READ THE MYSTERY BAGS

BAG A



Key: R = red B = blue G = green

1. List every possible colour:

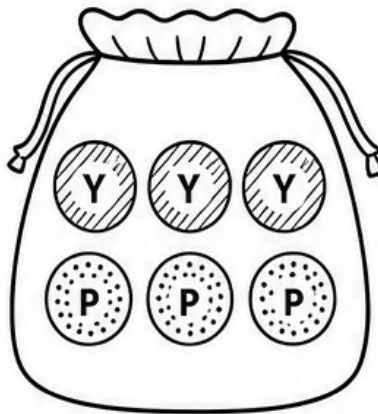
2. Which colour is most likely? _____

3. Which colour is least likely? _____

4. Is red likely? ☐ yes ☐ no

Explain: _____

BAG B



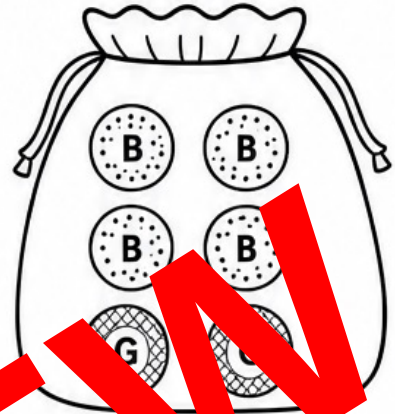
Key: Y = yellow P = purple

5. Which colours are possible? _____

6. Do yellow and purple have equal chance? ☐ yes ☐ no

Explain using the number of counters: _____

BAG C



Key: B = blue G = green

There are no orange counters in Bag C.

8. Which colour is impossible? _____

9. Which colour is most likely? _____

10. Is green possible? ☐ yes ☐ no

B. COMPARE THE BAGS

11. In which bag is one outcome certain? ☐ A ☐ B ☐ C ☐ none

12. Order these Bag A events from least likely to most likely:

pick green

pick blue

pick red

1 _____

2 _____

3 _____

13. Why can you know what is possible without knowing the next result?

Count the possible outcomes, then compare how often each one appears.

MYSTERY BAG REASONING

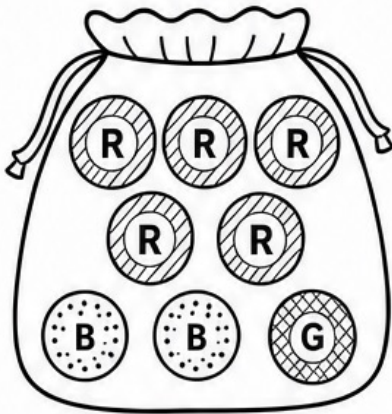
Worksheet 5 • Page 1

Name: ANSWERS

Date: _____

A. READ THE MYSTERY BAGS

BAG A



Key: R = red B = blue G = green

1. List every possible colour:

red, blue, green

2. Which colour is most likely? red

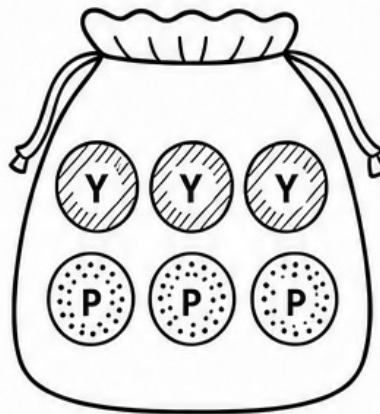
3. Which colour is least likely? green

4. Is red likely? ☒ yes ☐ no

Explain:

3 of the 8 counters are red.

BAG B



Key: Y = yellow P = purple

5. Which colours are possible?

yellow, purple

6. Do yellow and purple have equal chance? ☒ yes ☐ no

Explain using the number

of counters:

There are 3 yellow and 3 purple counters.

BAG C



Key: B = blue G = green

There are no orange counters in Bag C.

8. Which colour is impossible? orange

9. Which colour is most likely? blue

10. Is green possible? ☒ yes ☐ no

B. COMPARE THE BAGS

11. In which bag is one outcome certain? ☐ A ☐ B ☐ C ☒ none

12. Order these Bag A events from least likely to most likely:

pick green

pick blue

pick red

1 pick green

2 pick blue

3 pick red

13. Why can you know what is possible without knowing the next result?

The bag contents show every possible outcome, but a random draw does not tell us which one will happen next.

Count the possible outcomes, then compare how often each one appears.

MYSTERY BAG REASONING

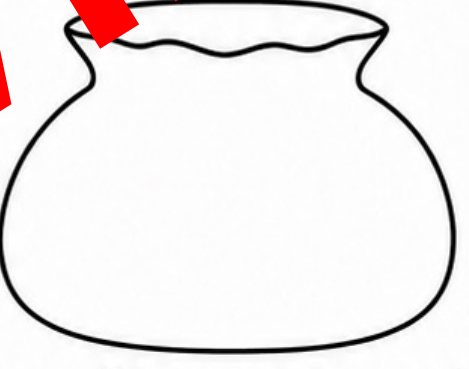
Worksheet 5 • Page 2

Name: _____

Date: _____

A. DESIGN THE BAGS

Draw and label counters to make each rule true. Then record your numbers.

1. CERTAIN Use 8 counters. Picking red must be certain.  red ____ total ____	2. EQUAL CHANCE Use 10 counters. Blue and green must have an equal chance.  blue ____ green ____ total ____
3. MOST AND LEAST LIKELY Use 9 counters. Yellow is most likely. Purple is least likely but possible. Orange is possible.  yellow ____ purple ____ orange ____ total ____	4. LIKELY AND UNLIKELY Use 12 counters. Red is impossible. Blue is likely. Green is unlikely.  red ____ blue ____ green ____ total ____

B. EXPLAIN YOUR DESIGNS

5. How do your numbers make Bag 2 an equal-chance bag?

6. Could another student make a different correct Bag 3? ☐ yes ☐ no Explain:

7. In Bag 4, why is red impossible?

8. If you pick a counter, replace it and pick again, is the second pick controlled by the first? ☐ yes ☐ no

Why?

A design works when its counter numbers match every part of the rule.

MYSTERY BAG REASONING

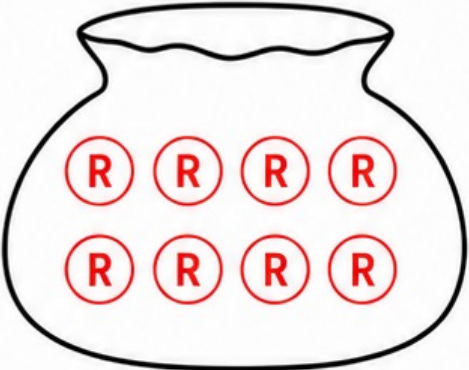
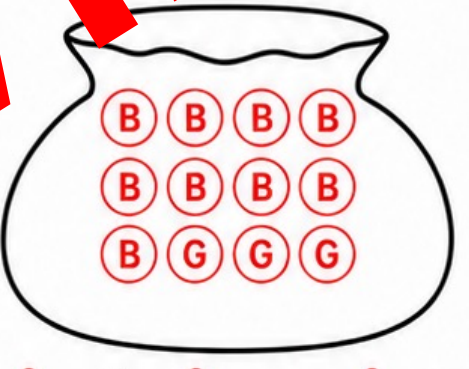
Worksheet 5 • Page 2

Name: ANSWERS

Date: _____

A. DESIGN THE BAGS

Draw and label counters to make each rule true. Then record your numbers.

1. CERTAIN Use 8 counters. Picking red must be certain.  red <u>8</u> total <u>8</u>	2. EQUAL CHANCE Use 10 counters. Blue and green must have an equal chance.  blue <u>5</u> green <u>5</u> total <u>10</u>
3. MOST AND LEAST LIKELY Use 9 counters. Yellow is most likely. Purple is least likely but possible. Orange is possible.  yellow <u>6</u> purple <u>1</u> orange <u>2</u> total <u>9</u>	4. LIKELY AND UNLIKELY Use 12 counters. Red is impossible. Blue is likely. Green is unlikely.  red <u>0</u> blue <u>9</u> green <u>3</u> total <u>12</u>

B. EXPLAIN YOUR DESIGNS

5. How do your numbers make Bag 2 an equal-chance bag?

Blue and green both have 5 counters.

6. Could another student make a different correct Bag 3? ☒ yes ☐ no Explain:

Yes. For example, 6 yellow, 1 purple and 2 orange also works.

7. In Bag 4, why is red impossible?

There are no red counters in Bag 4.

8. If you pick a counter, replace it and pick again, is the second pick controlled by the first? ☐ yes ☒ no

Why?

No. Replacing the counter resets the bag, so each pick is independent.

A design works when its counter numbers match every part of the rule.

CHANCE CHALLENGE

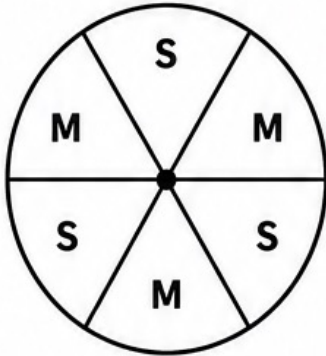
Worksheet 6 • Page 1

Name: _____

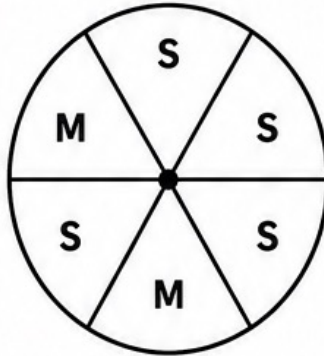
Date: _____

A. FAIR GAME INSPECTOR

SPINNER P



SPINNER Q



Key: S = star wins M = moon wins

1. Which spinner gives star and moon an equal chance?

☐ P ☐ Q

2. Is Spinner Q fair for two players?

☐ yes ☐ no

3. Explain using the number of sections.

4. How could you change spinner Q to make fair?

B. REPEATED RESULTS

A fair coin was tossed 20 times in each trial.

Trial	Heads	Tails	Total
1	11	9	20
2	8	12	20
3	16	4	20

5. Did all three trials give the same results?

☐ yes ☐ no

6. Which trial had the most heads? _____

7. Does Trial 2 prove the coin is unfair?

☐ yes ☐ no

8. Explain why repeated fair experiments can have different results.

C. WHAT HAPPENS NEXT?

A coin has landed on heads four times in a row.

9. Is it certain on the next toss? ☐ yes ☐ no

10. What outcomes are possible next? _____

11. Choose the best reason:

A The coin remembers the last toss. **B** Each new toss is independent. **C** Heads can no longer happen.

12. Explain what independent means here. _____

D. CHANCE LANGUAGE

13. Write impossible, unlikely, even chance, likely or certain for each:

a. Rolling a number from 1 to 6 on a standard die: _____

b. Rolling a 9 on a standard die: _____

c. Picking red from a bag with 7 red and 1 blue counter: _____

d. Picking blue from a bag with 4 blue and 4 green counters: _____

Fair does not mean every short trial must have identical results.

CHANCE CHALLENGE

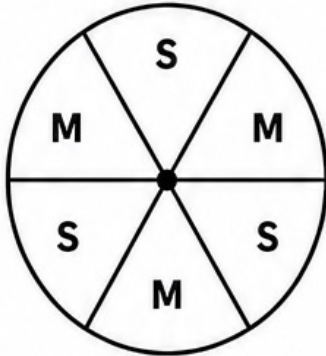
Worksheet 6 • Page 1

Name: _____ **ANSWERS**

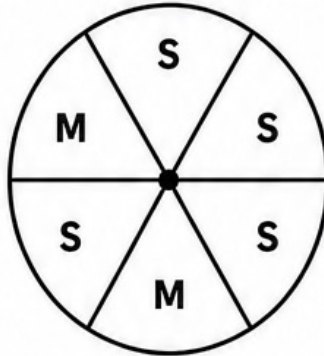
Date: _____

A. FAIR GAME INSPECTOR

SPINNER P



SPINNER Q



Key: S = star wins M = moon wins

1. Which spinner gives star and moon an equal chance?

☒ P ☐ Q

2. Is Spinner Q fair for two players?

☐ yes ☒ no

3. Explain using the number of sections.

P has 3 S and 3 M. Q has 4 S and 2 M.

4. How could you change spinner Q to make it fair?

Change one section to M so each has 3 sections.

B. REPEATED RESULTS

A fair coin was tossed 20 times in each trial.

Trial	Heads	Tails	Total
1	11	9	20
2	8	12	20
3	10	10	20

5. Did all three trials give the same results?

☐ yes ☒ no

6. Which trial had the most heads? **Trial 1**

7. Does Trial 2 prove the coin is unfair?

☐ yes ☒ no

8. Explain why repeated fair experiments can have different results.

Random results vary, even when each outcome has an equal chance.

C. WHAT HAPPENS NEXT?

A coin has landed on heads four times in a row.

9. Is it certain on the next toss? ☐ yes ☒ no

10. What outcomes are possible next? **heads or tails**

11. Choose the best reason:

A The coin remembers the last toss. **B** Each new toss is independent. **C** Heads can no longer happen.

12. Explain what independent means here. **The result of one toss does not affect the next toss.**

D. CHANCE LANGUAGE

13. Write impossible, unlikely, even chance, likely or certain for each:

a. Rolling a number from 1 to 6 on a standard die:

certain

b. Rolling a 9 on a standard die:

impossible

c. Picking red from a bag with 7 red and 1 blue counter:

likely

d. Picking blue from a bag with 4 blue and 4 green counters:

even chance

Fair does not mean every short trial must have identical results.

CHANCE CHALLENGE

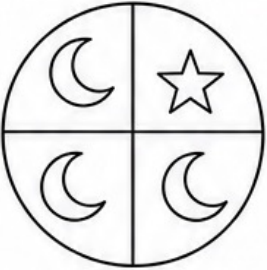
Worksheet 6 • Page 2

Name: _____

Date: _____

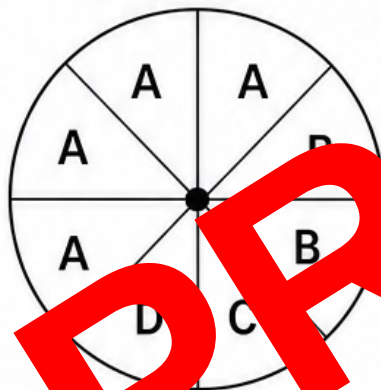
A. FRACTION OF THE OUTCOMES

For equally likely outcomes, count the matching outcomes and the total outcomes.

1.  Chance of H = ____ out of ____ = ____	2.  Chance of rolling 5 = ____ out of ____ = ____
3.  Chance of star = ____ out of ____ = ____	4.  Chance of blue = ____ out of ____ = ____

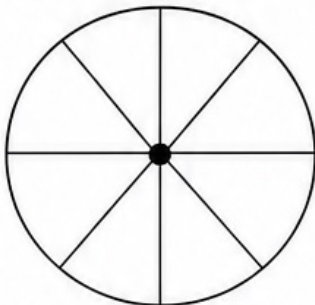
B. SPINNER R

8 equal sections



5. List all possible outcomes: _____
6. Complete: Chance of A = ____ / 8 Chance of B = ____ / 8
7. Which outcome is most likely? _____
8. Which outcomes are equally least likely? _____ and _____
9. If Player 1 wins on C and Player 2 wins on D, is the game fair?
☐ yes ☐ no
10. Explain using the number of sections.

C. DESIGN A FAIR SPINNER



Make a fair game for Player X and Player Y. Label every section X or Y.

11. Complete: X has ____ sections. Y has ____ sections.
12. Explain why the game is fair.

D. THINK DEEPLY

13. A fair six-sided die is rolled. Sam says, "I have not rolled a 6 yet, so 6 is more likely next." Is Sam correct? ☐ yes ☐ no
14. Explain. _____

Fractions describe the share of equally likely outcomes, not what must happen next.

CHANCE CHALLENGE

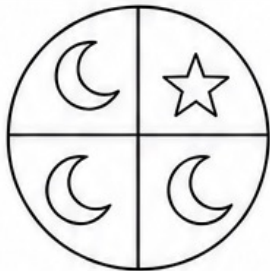
Worksheet 6 • Page 2

Name: **ANSWERS**

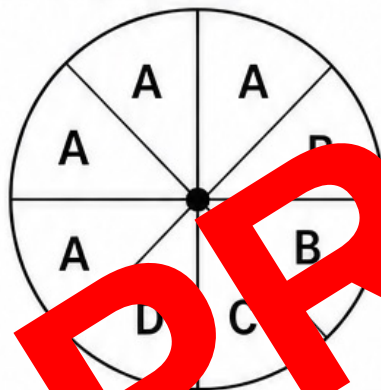
Date: _____

A. FRACTION OF THE OUTCOMES

For equally likely outcomes, count the matching outcomes and the total outcomes.

1.  Chance of H = <u>1</u> out of <u>2</u> = <u>1/2</u>	2.  Chance of rolling 5 = <u>1</u> out of <u>6</u> = <u>1/6</u>
3.  Chance of star = <u>1</u> out of <u>4</u> = <u>1/4</u>	4.  Chance of blue = <u>2</u> out of <u>4</u> = <u>1/2</u>

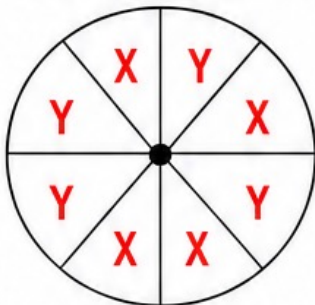
B. SPINNER R



8 equal sections

5. All possible outcomes: A, B, C, D
6. Complete: Chance of A = 4 / 8 Chance of B = 2 / 8
7. Which outcome is most likely? A
8. Which outcomes are equally least likely? C and D
9. If Player 1 wins on C and Player 2 wins on D, is the game fair?
☒ yes ☐ no
10. Explain using the number of sections.
C and D each have 1 of the 8 equal sections.

C. DESIGN A FAIR SPINNER



Make a fair game for Player X and Player Y. Label every section X or Y.

11. Complete: X has 4 sections. Y has 4 sections.
12. Explain why the game is fair.
Both players have the same number of equal sections.

D. THINK DEEPLY

13. A fair six-sided die is rolled. Sam says, "I have not rolled a 6 yet, so 6 is more likely next." Is Sam correct? ☐ yes ☒ no
14. Explain.
Each roll is independent. Every number still has an equal chance next.

Fractions describe the share of equally likely outcomes, not what must happen next.

SCHOOL FÊTE CHANCE INVESTIGATION

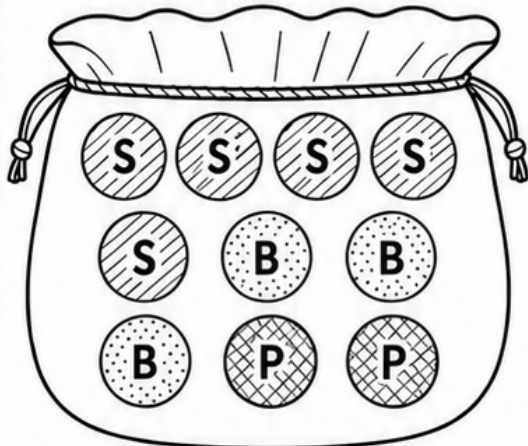
Assessment • Page 1

Name: _____

Date: _____

Show what you know about outcomes, likelihood, fairness and planning a chance experiment.

A. PRIZE BAG:



S = sticker B = bouncy ball P = pencil

1. List all possible prizes: _____
2. Which prize is most likely? _____
3. Which prize is least likely? _____
4. Complete: Chance of a pencil = ____ out of ____
5. Is picking a sticker certain? ☐ yes ☐ no
6. Explain your answer using the bag contents: _____

B. FÊTE SPINNER:



C = candy R = ruler F = frisbee K = keyring

7. List all possible prizes: _____
8. Which prize is most likely? _____
9. Which prizes are equally least likely? _____ and _____
10. Complete: Chance of a ruler = ____ / 8
11. If Player 1 wins on F and Player 2 wins on K, is the game fair? ☐ yes ☐ no
12. Explain using the number of sections: _____

PLAN YOUR EXPERIMENT

Choose the prize bag **OR** the fête spinner for a 20-trial experiment.

13. I will use: ☐ prize bag ☐ fête spinner
14. List every possible outcome for your choice: _____
15. Predict which outcome will occur most often: _____
16. Explain your prediction.

17. Tick every step needed for a fair repeatable test:
☐ Record every result. ☐ Complete 20 trials. ☐ Change the spinner after each turn.
☐ Replace a bag ticket after each draw. ☐ Ignore results I did not expect.
18. Why must a bag ticket be replaced after each draw?

SCHOOL FÊTE CHANCE INVESTIGATION

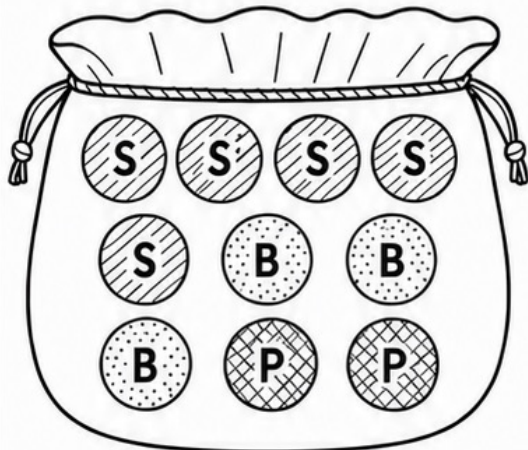
Assessment • Page 1

Name: ANSWERS

Date: _____

Show what you know about outcomes, likelihood, fairness and planning a chance experiment.

A. PRIZE BAG:



S = sticker B = bouncy ball P = pencil

- List all possible prizes: sticker, bouncy ball, pencil
- Which prize is most likely? sticker
- Which prize is least likely? pencil
- Complete: Chance of a pencil = 2 out of 10
- Is picking a sticker certain? ☐ yes ☒ no
- Explain your answer using the bag contents.
Only 5 of the 10 tickets are stickers
so other prizes are possible

B. FÊTE SPINNER:



R = ruler F = frisbee K = keyring

- List all possible prizes: card, ruler, frisbee, keyring
- Which prize is most likely? card
- Which prizes are equally least likely? frisbee and keyring
- Complete: Chance of a ruler = 2 / 8
- If Player 1 wins on F and Player 2 wins on K, is the game fair? ☒ yes ☐ no
- Explain using the number of sections.
F and K each have 1 of the 8 equal sections.

C. PLAN YOUR EXPERIMENT

Choose the prize bag **OR** the fête spinner for a 20-trial experiment.

- I will use: ☒ prize bag ☐ fête spinner
- List every possible outcome for your choice: sticker, bouncy ball, pencil
- Predict which outcome will occur most often: sticker
- Explain your prediction.
Sticker has 5 of the 10 tickets, more than any other prize.
- Tick every step needed for a fair repeatable test:

☒ Record every result.	☒ Complete 20 trials.	☐ Change the spinner after each turn.
☒ Replace a bag ticket after each draw.	☐ Ignore results I did not expect.	
- Why must a bag ticket be replaced after each draw?
Replacing it keeps the same bag contents and chances for every draw.

SCHOOL FÊTE CHANCE INVESTIGATION

Assessment • Page 2

Name: _____

Date: _____

A. CONDUCT 20 TRIALS

Use the prize bag or fête spinner you selected on page 1. Record every result. If you use the bag, replace the ticket after every draw.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

B. ORGANISE YOUR RESULTS

2.

Outcome	Tally	Total
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Use only the rows you need.

3. Check: The totals add to _____.



C. ANALYSE AND DISCUSS

5. Which outcome occurred most often? _____

6. Which outcome occurred least often? _____

7. Did your results match your prediction? ☐ yes ☐ no

8. Use your results to explain your answer.

9. If you repeat the experiment, must you get the same totals?

☐ yes ☐ no

10. Why can repeated chance experiments have different results?

11. Is the next result controlled by the result before it?

☐ yes ☐ no

12. Explain.

13. Was your experiment fair and repeatable? ☐ yes ☐ no

14. Give one piece of evidence from your method.

15. Write one conclusion about possible outcomes, likelihood or variation.

Outcome knowledge ____ / 4 Method and recording ____ / 4 Reasoning about variation ____ / 4 Total ____ / 12

SCHOOL FÊTE CHANCE INVESTIGATION

Assessment • Page 2

Name: **ANSWERS**

Date: _____

A. CONDUCT 20 TRIALS

Use the prize bag or fête spinner you selected on page 1. Record every result. If you use the bag, replace the ticket after every draw.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

STUDENT RESULTS WILL VARY

B. ORGANISE YOUR RESULTS

Outcome	Tally	Total
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

OUTCOMES, TALLIES AND TOTALS WILL VARY

Use only the rows that you need.

3. Check: The totals add to 20.

C. ANALYSE AND DISCUSS

5. Which outcome occurred most often? **results will vary**

6. Which outcome occurred least often? **results will vary**

7. Did your results match your prediction? ☐ yes ☐ no
answers will vary

8. Use your results to explain your answer.

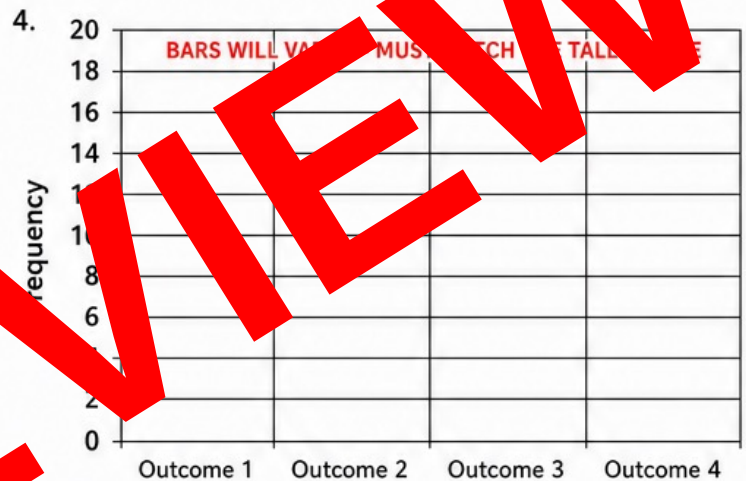
The explanation must compare the prediction with the student's recorded totals.

9. If you repeat the experiment, must you get the same totals?
☐ yes ☒ no

10. Why can repeated chance experiments have different results?
Random chance creates variation, even when the method stays the same.

11. Is the next result controlled by the result before it?
☐ yes ☒ no

12. Explain. **With replacement, one result does not control the next result.**



13. Was your experiment fair and repeatable? ☐ yes ☐ no
Accept yes when the method was followed consistently.

14. Give one piece of evidence from your method.

Evidence may include recording every result, completing 20 trials and replacing each bag ticket.

15. Write one conclusion about possible outcomes, likelihood or variation.

Example: The expected most-likely outcome often occurred most, but repeated results can vary.

TEACHER MARKING — USE THE RUBRIC

Outcome knowledge ____ / 4 Method and recording ____ / 4 Reasoning about variation ____ / 4 Total ____ / 12

CHANCE AND PROBABILITY YR 3 RUBRIC

Australian Curriculum: AC9M3P01

Student: _____

Date: _____

Teacher: _____

Use evidence from class activities, worksheets and the School Fête Chance Investigation.

CRITERION	BEGINNING 1	DEVELOPING 2	ACHIEVING 3	CONFIDENT 4	EXCEEDING 5
Possible outcomes & chance language	☐ Names an outcome with support; chance words may be confused.	☐ Lists some possible outcomes and uses a few chance words.	☐ Identifies all possible outcomes and uses impossible, unlikely, even chance, likely and certain correctly.	☐ Explains likelihood by comparing the number of matching outcomes.	☐ Justifies and creates events that match precise likelihood conditions.
Likelihood & fairness	☐ Makes a simple guess about what may happen.	☐ Identifies more likely outcomes in familiar examples.	☐ Compares likelihood and decides whether equal-outcome games are fair.	☐ Uses counts or equal sections to justify fairness and redesign an unfair game.	☐ Evaluates unfamiliar games and clearly defends a fair design.
Conducting a repeated experiment	☐ Completes trials with frequent support.	☐ Follows most steps but may miss replacement or consistent method.	☐ Conducts 20 repeated trials using a fair, consistent method.	☐ Works independently and explains why the method is repeatable.	☐ Refines the method and explains how changes could affect chances.
Recording & representing results	☐ Records a few results with support.	☐ Records most results; totals or tallies may contain errors.	☐ Represents every result accurately using a table, bar graph or pictograph.	☐ Checks that representations agree and uses data to compare outcomes.	☐ Selects clear representations and interprets patterns precisely.
Variation & independence reasoning	☐ Describes what happened in one trial.	☐ Notices that repeated results can differ.	☐ Recognises and discusses variation across repeated experiments.	☐ Explains that one result does not control the next independent result.	☐ Connects expected likelihood, observed variation and independence in a well-supported conclusion.

Total: ____ / 25 Overall judgement: _____

Teacher feedback: _____

AC9M3P01: conduct repeated chance experiments; identify and describe possible outcomes, record the results, recognise and discuss the variation.

Chance and Probability



Learning Goals

- Identify and describe every possible outcome.
- Use chance language to compare likelihood.
- Conduct, record and analyse a repeated chance experiment.
- Explain why fair experiments still give different results.



What Does Chance Mean?

- Chance tells us how likely an event is to happen.
- Some events cannot happen; some must happen.
- Between those ends, events can be unlikely, even chance or likely.
- We use evidence, not just a guess—to explain our thinking.



Chance Language Ladder

- Impossible: cannot happen.
- Unlikely: can happen, but probably will not.
- Even chance: two sides are equally likely.
- Likely: probably will happen.
- Certain: must happen.



Possible Outcomes

- An outcome is one result that could happen.
- A coin has two outcomes: heads and tails.
- A standard die has six outcomes: 1, 2, 3, 4, 5 and 6.
- List all outcomes before deciding what is most likely.



Explain Everyday Events

- Rolling a 9 on a standard die is impossible.
- The sun rising tomorrow is certain.
- Picking red from 7 red and 1 blue counter is likely.
- Strong evidence makes the evidence that makes an event more or less likely.



The Experiment Cycle

- Predict what may happen.
- Repeat the same change in condition many times.
- Record every result accurately.
- Compare the results and discover patterns.
- Recognize that the results can vary.



A Fair Coin

- The possible outcomes are head and tail.
- Each outcome has an equal chance of every toss.
- Fair does not mean that 100 tosses must give exactly five of each.
- Short series of random results can vary.



Plan a Coin Investigation

- Predict which outcome may occur most often.
- Toss the same fair coin 20 times.
- Record H or T after every toss.
- Tally the tosses and check they add to 20.
- Compare the evidence with your prediction.



Coin Trial A

Trial A: 20 tosses

- Heads: 9
- Tails: 11
- The totals are close, but not identical.
- This result is possible for a fair coin.



Coin Trial B and Variation

Trial B: 20 tosses

- Heads: 13
- Tails: 7
- Trial B has 4 more heads than Trial A.
- Different trials can produce different totals. This is variation.



Independent Trials

- A coin has landed on heads four times in a row.
- Tails is still not certain on the next toss.
- Heads and tails are both possible again.
- The coin does not remember: one toss does not control the next.



A Fair Six-Sided Die

- Possible outcomes: 1, 2, 3, 4, 5 and 6.
- Each face has an equal chance on a roll.
- Rolling 4 is possible.
- Rolling for 7 is impossible.



Reason About Die Events

- Rolling an even number: 2 or 4—two outcomes.
- Rolling an odd number: 1, 3 or 5—three outcomes.
- Even and odd have equal chance.
- Rolling a number greater than 4 has two outcomes: 5 or 6.



Repeated Die Rolls

Group A totals for 1–6: 3, 4, 6, 7, 5,

Group B totals for 1–6: 5, 3, 4, 7, 5.

- Both groups completed 2 rolls.
- Their totals differ because repeated random experiments vary.



Spinner Outcomes

- Equal-sized sections create equally likely section outcomes.
- More matching sections make an outcome more likely.
- No matching sections make an outcome impossible.
- Count every section being made when making a claim.



Spinner Sleuth Reasoning

An 8-section spinner has 4 red, 2 blue and 2 green sections.

- Red is most likely.
- Blue and green have an equal chance.
- All three colours are possible.
- A fair two-player spinner gives each player the same number of equal sections.



Random Draw

- A mystery bag may contain counters of several colours.
- List every colour that is present.
- More counters of one colour make that colour more likely.
- A colour with no counters is impossible.
- Replace the counter to keep the chances the same for the next draw.



Compare Mystery Bags

Bag A: 5 red, 2 blue, 1 green.

Bag B: 3 yellow, 3 purple

- Red is most likely in Bag A; green is least likely.
- Yellow and purple have an equal chance in Bag B.
- Use counts to justify each prediction.



Fair and Unfair Games

- A fair game gives each player an equal chance to win.
- Equal chances can come from equal spinner sections or equal numbers of winning outcomes.
- An unfair game gives you an unequal chance to win.
- Redesign the outcomes—the results—to make a game fair.



Bank or Bust

- Roll a fair die and choose whether to bank your points.
- Rolling 1 can end the round, so every roll includes risk.
- Track results across multiple rounds.
- Discuss whether both players used the same rules and chances.



Plan a Chance Experiment

- Choose one chance device: coin, die, spinner or random number bag.
- List all possible outcomes.
- Keep the device and rules unchanged.
- Decide how many trials to complete.
- Make a prediction you can compare with evidence.



Record Results Clearly

- Write every result as it happens.
- Use tally marks to organise repeated outcomes.
- Check that all totals equal the number of trials.
- A simple bar chart can make comparisons easier.
- Do not ignore an unexpected result.



Discuss Variation

Try these sentence stems:

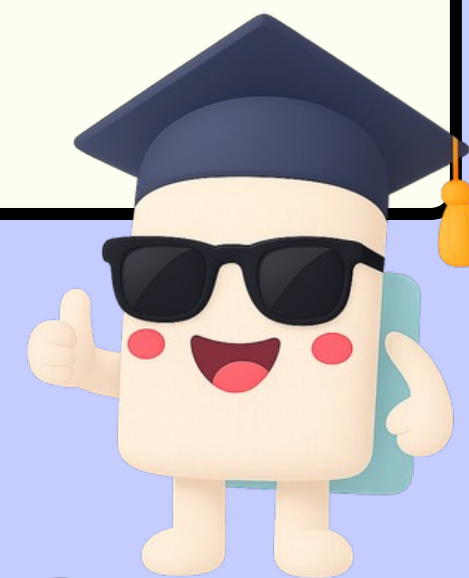
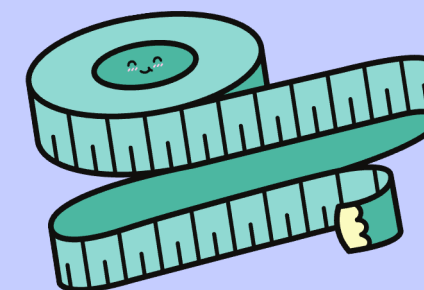
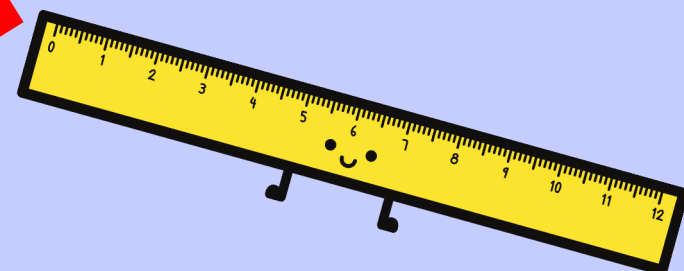
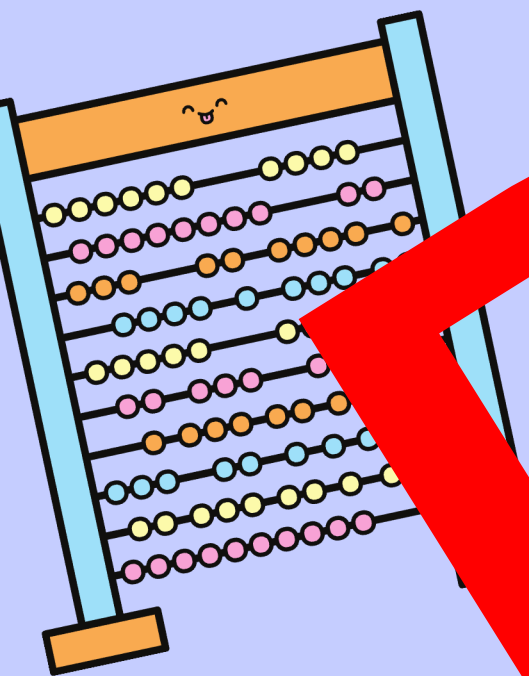
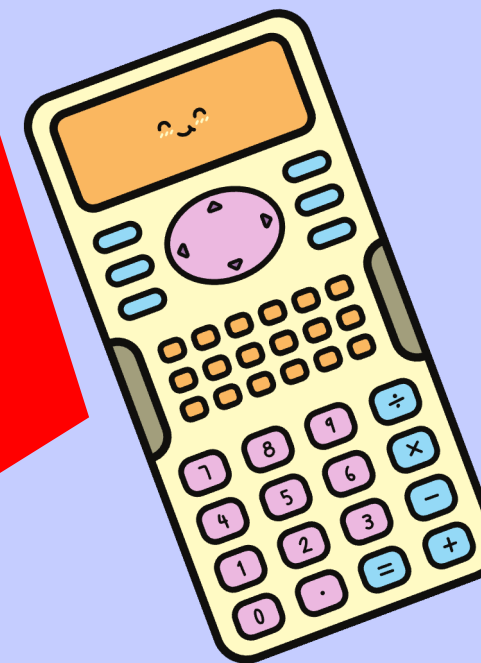
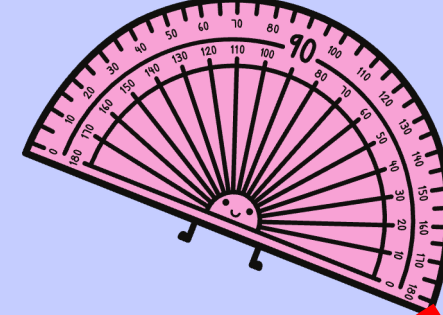
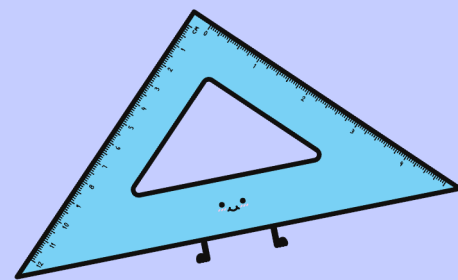
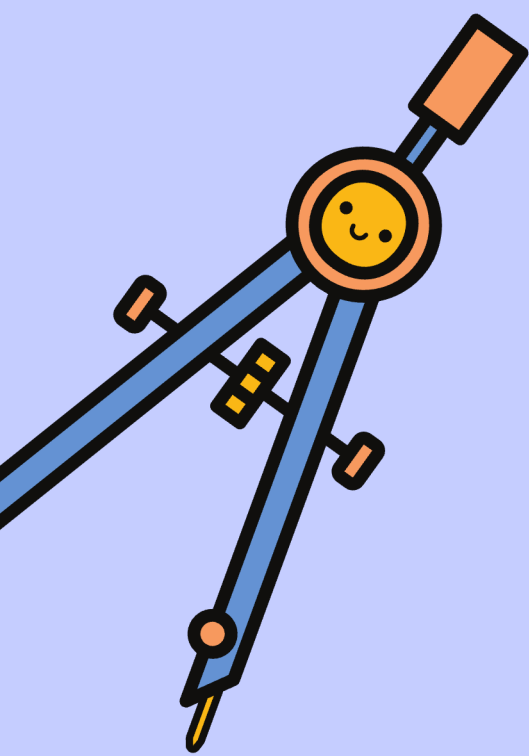
- I predicted ... because ...
- The most common outcome was ...
- Our results differed from ... by ...
- If we repeated the experiment, the totals might ...
- This does not make the device unfair because ...



Lesson Check

- Can you list every possible outcome?
- Can you use impossible, unlikely, even chance, likely and certain?
- Can you conduct an experiment with repeated trials?
- Can you explain variation and independent results?
- We are back to the School Fête Chance Investigation!





Well Done!

PREVIEW

Chance and Probability Quiz



Question 1

Which event is impossible?

- A. Roll a 7 on a standard die
- B. Toss heads on a coin
- C. Pick red from a red-and-blue bag
- D. Spin a section on a standard-moon spinner



Answer 1

Correct answer: A

A standard die has outcomes 1, 2, 3, 4, 5 and 6. There is no 7, so rolling 7 is impossible.



Question 2

True or false?

Two repeated experiments can produce different totals.



Answer 2

Correct answer: True

Random results naturally vary. A fair method gives equal chances; it does not force identical short-term totals.



Question 3

Short answer

List the two possible outcomes when a fair coin is tossed.



Answer 3

Model answer: heads or tails

Both outcomes are possible on every fair toss.



Question 4

Which number is a possible outcome when a fair six-sided die is rolled?

A. 0

B. 4

C. 6

D. 10



Answer 4

Correct answer: B — 4

A standard die shows the numbers 1 to 6, so 4 is possible.



Question 5

True or false?

If a coin lands on tails, heads is certain on the next toss.



Answer 5

Correct answer: False

The tosses are independent. Heads and tails are both possible again; the previous result does not control the next.



Question 6

An 8-section spinner has 4 red, 2 blue, 1 green and 1 yellow section. Which colour is most likely?

A. Red

B. Blue

C. Green

D. Yellow



Answer 6

Correct answer: A — Red

Red covers one of 8 equal sections, more than any other colour.



Question 7

Short answer

Trial A: 9 heads and 1 tails.

Trial B: 13 heads and 7 tails.

Describe the way the results vary.



Answer 7

Model answer:

Trial B has 4 more heads than Trial A. Both totals are possible for a fair coin, showing variation between repeated trials.



Question 8

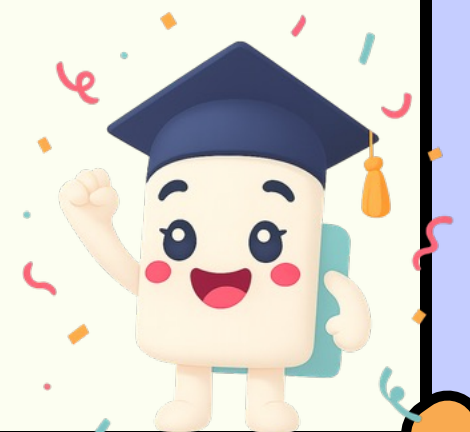
A bag contains 5 red, 2 blue and 1 green counter. Which colour is least likely?

A. Red

B. Blue

C. Green

D. They are equal



Answer 8

Correct answer: C — Green.

Only 1 of the 3 centers is green so green is possible but least likely.



Question 9

Short answer

Name one function that makes a two player chance game fair.



Answer 9

Model answer:

Each player must have an equal chance to win—for example, the same number of equal binoculars.



Question 10

True or false?

More trials can reveal a pattern, but they do not guarantee the exact next result.

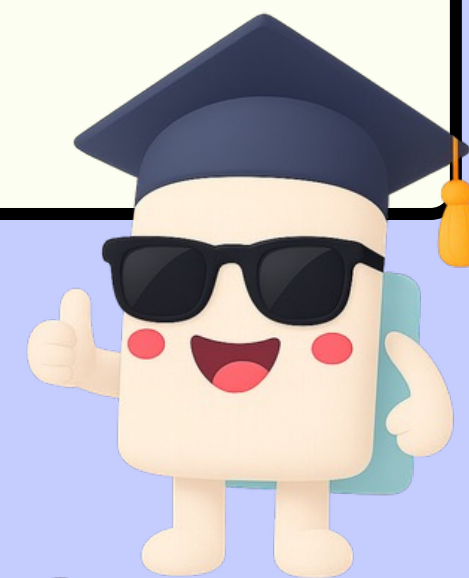
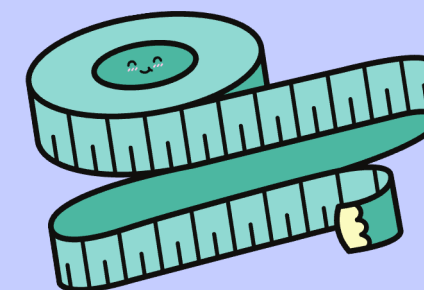
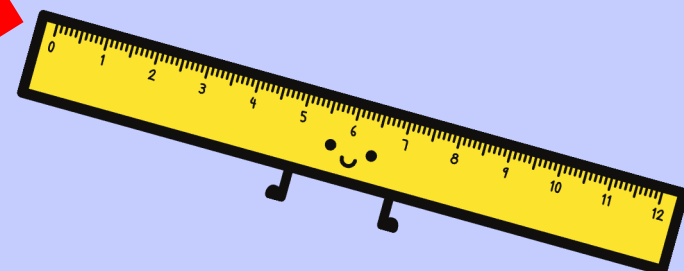
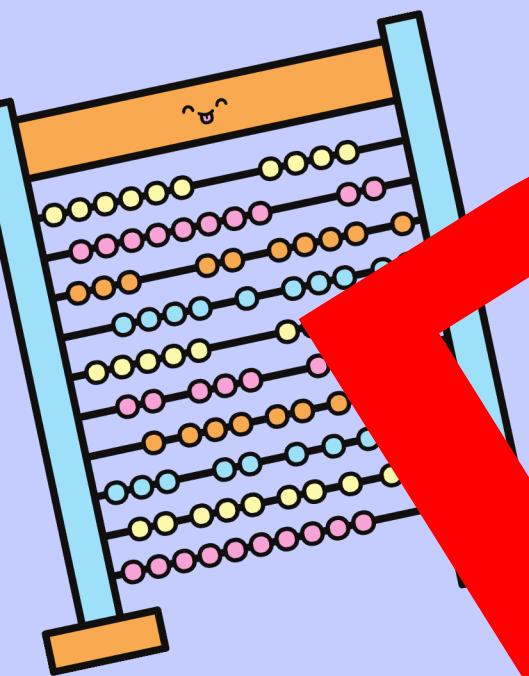
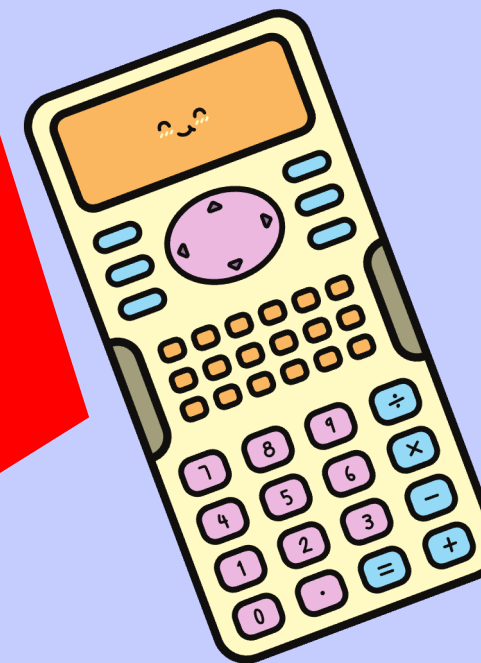
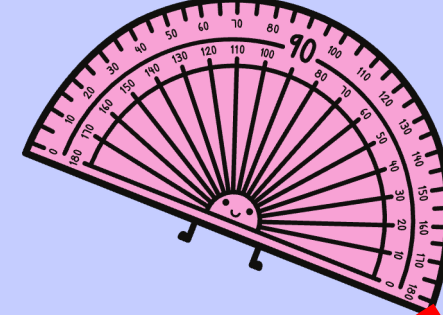
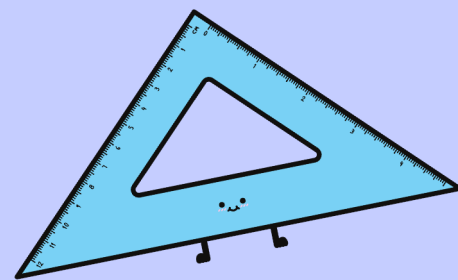
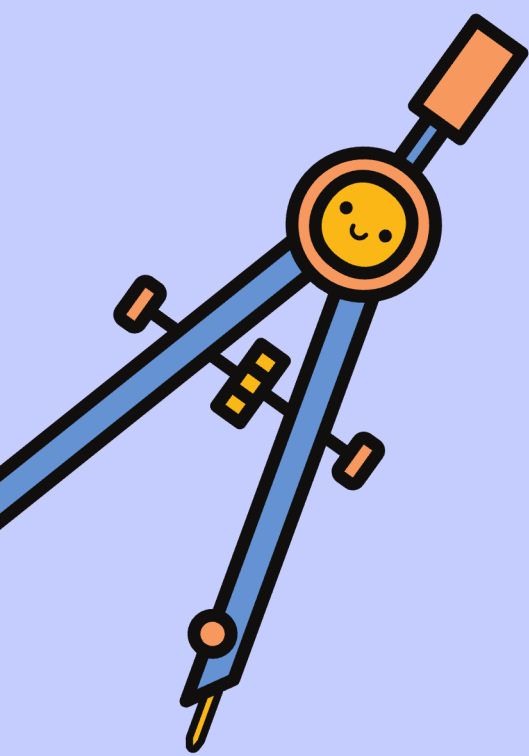


Answer 10

Correct answer: True

A larger set of results may show an expected pattern, but the next independent result is still uncertain.





Well Done!

PREVIEW