Worksheet 49

Year 3 Mathematics — Australian Curriculum v9.0
Subtopic: Conduct Repeated Chance Experiments

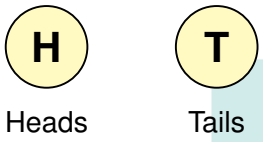
Name: _____ **Date:** _____

Score: _____ / 30

Section 1: Fluency — Prediction (Questions 1–10)

Instructions: Make predictions about chance experiments.

Question 1: Look at this coin:



Heads Tails

If I flip a normal coin 20 times, how many Tails do you expect? Why?

Answer: _____

Question 2: If I flip a coin 20 times, how many Heads do you expect?

Answer: _____

Question 3: Is it *possible* to get 20 Heads in a row?

Answer: _____

Question 4: Is it *likely* to get 20 Heads in a row?

Answer: _____

Question 5: Which result is more likely if you flip a coin 10 times?

A. 5 Heads and 5 Tails
B. 10 Heads and 0 Tails

Answer: _____

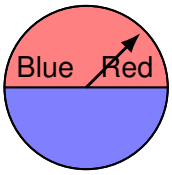
Question 6: If I roll a normal die once, what numbers could I get?

Answer: _____

Question 7: If I roll a die 6 times, do you think I will get each number exactly once?

Answer: _____

Question 8: Look at this spinner:



If I spin this 10 times, about how many times should it land on Red?

Answer: _____

Question 9: Why do we make predictions before doing an experiment?

Answer: _____

Question 10: True or False: When you flip a coin, you will always get exactly half Heads and half Tails.

Answer: _____

Good Job!

Why did the scientist install a knocker on their door? To win the No-bell Prize!

Section 2: Reasoning — Recording Data (Questions 11–20)

Instructions: Record experiment results using tally marks.

Questions 11-15: Here are the results of 20 coin flips:
H, H, T, H, T, T, H, T, H, H, T, H, H, T, T, T, H, H, H, T
Complete the Tally Table below:

Outcome	Tally	Total
Heads		
Tails		

Question 11: How many Heads were there?

Answer: _____

Question 12: How many Tails were there?

Answer: _____

Question 13: What is the total number of flips?

Answer: _____

Question 14: Which outcome happened more often?

Answer: _____

Question 15: How many more Heads than Tails were there?

Answer: _____

Questions 16-20: Sam rolls a die 10 times and gets: 3, 5, 2, 6, 5, 1, 5, 4, 5, 6
Complete this tally table:

Number	Tally	Total
1		
2		
3		
4		
5		
6		

Question 16: Which number came up the most?

Answer: _____

Question 17: How many times did Sam roll a 5?

Answer: _____

Question 18: How many times did Sam roll a 1?

Answer: _____

Question 19: Which numbers did NOT come up at all?

Answer: _____

Question 20: What is the total number of rolls?

Answer: _____

Good Job!

Why do scientists like tally marks? Because they can count on them!

Section 3: Challenge — Comparing Results (Questions 21–30)

Instructions: Compare predictions with actual results.

Question 21: You predicted 10 Heads in 20 flips. You got 11 Heads. Was your prediction close? Explain.

Answer: _____

Question 22: Emma predicted 5 Tails in 10 flips. She got 7 Tails. What is the difference?

Answer: _____

Question 23: If you flip a coin 100 times, would you expect exactly 50 Heads and 50 Tails?

Answer: _____

Question 24: Jack flipped a coin 10 times and got 6 Heads and 4 Tails. Is this result reasonable? Why?

Answer: _____

Question 25: Lucy flipped a coin 10 times and got 10 Heads. Should she be surprised? Why?

Answer: _____

Question 26: Why might your actual results be different from your prediction?

Answer: _____

Question 27: If you did the same experiment twice, would you get exactly the same results? Why or why not?

Answer: _____

Question 28: Tom predicted he would roll a 6 three times in 18 rolls. He got 2 sixes. How close was he?

Answer: _____

Question 29: What does ”variation” mean in chance experiments?

Answer: _____

Question 30: True or False: Getting results close to your prediction means your experiment worked well.

Answer: _____

Good Job!

Why didn’t the skeleton play cards? Because his heart wasn’t in it!

Excellent Work! You've completed Worksheet 49!

Answer Key — Worksheet 49

Year 3 Mathematics

Section 1: Fluency

1. About 10 Tails (half of 20)
2. About 10 Heads
3. Yes (possible but unlikely)
4. No (very unlikely)
5. A
6. 1, 2, 3, 4, 5, or 6
7. Not necessarily (variation occurs)
8. About 5 times
9. To compare with actual results
10. False

Section 2: Reasoning

11. 11 Heads
12. 9 Tails
13. 20 flips
14. Heads
15. 2 more Heads
16. 5 (appeared 4 times)
17. 4 times
18. 1 time
19. None (all appeared at least once)
20. 10 rolls

Section 3: Challenge

21. Yes, very close (only 1 away)
22. 2 (7-5=2)
23. Close to 50/50 but not exactly
24. Yes, reasonable variation
25. Yes, very unlikely/surprising
26. Chance/randomness/variation
27. No, results vary
28. Very close (1 away from prediction)
29. Results differ from predictions
30. True

Worksheet 50

Year 3 Mathematics — Australian Curriculum v9.0
Subtopic: Conduct Repeated Chance Experiments

Name: _____ **Date:** _____

Score: _____ / 30

Section 1: Fluency — Dice Experiments (Questions 1–10)

Instructions: Analyze dice experiment results.

Questions 1-5: Tom rolls a die 12 times and gets these results:
1, 6, 6, 6, 6, 6, 6, 2, 6, 6, 6, 6

Question 1: How many times did Tom roll a 6?

Answer: _____

Question 2: Look at Tom's results. Do you think the die is fair? Why or why not?

Answer: _____

Question 3: What numbers did Tom NOT roll?

Answer: _____

Question 4: If the die was fair, about how many 6s would you expect in 12 rolls?

Answer: _____

Question 5: Is Tom's result very different from what you would expect? Explain.

Answer: _____

Question 6: Look at this die:

Fair Die

If I roll a fair die 60 times, about how many times should I roll a 3?

Answer: _____

Question 7: What makes a die ”fair”?

Answer: _____

Question 8: If you roll a die once, what is the chance of getting any particular number (like a 4)?

Answer: _____

Question 9: Sarah rolls a die 6 times. Should she expect each number to come up exactly once?

Answer: _____

Question 10: True or False: If a die is fair, all numbers have an equal chance.

Answer: _____

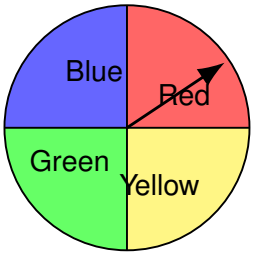
Good Job!

What do you call a die that tells jokes? A funny cube!

Section 2: Reasoning — Spinner Experiments (Questions 11–20)

Instructions: Analyze spinner experiments.

Questions 11-16: Look at this spinner:



Question 11: If I spin this 40 times, about how many times should it land on Red?

Answer: _____

Question 12: If I spin this 40 times, about how many times should it land on Blue?

Answer: _____

Question 13: Are all four colours equally likely?

Answer: _____

Question 14: If I spin this 100 times, about how many times should it land on Green?

Answer: _____

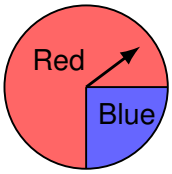
Question 15: Why is this spinner ”fair”?

Answer: _____

Question 16: If the spinner landed on Yellow 15 times in 40 spins, is this reasonable?

Answer: _____

Question 17: Look at this unfair spinner:



Which colour is more likely to be landed on?

Answer: _____

Question 18: Why is the spinner in Question 17 unfair?

Answer: _____

Question 19: If you spun the unfair spinner 12 times, would you expect more Red or Blue?

Answer: _____

Question 20: How can you tell if a spinner is fair just by looking at it?

Answer: _____

Good Job!

Why was the spinner dizzy? It had been going around in circles all day!

Section 3: Challenge — Designing an Experiment (Questions 21–30)

Instructions: Plan and analyze chance experiments.

Question 21: I want to test if a coin is fair. Describe a simple experiment I can do to check.

Answer: _____

Question 22: How many times should you flip the coin to get a good idea if it's fair?

Answer: _____

Question 23: What results would make you think a coin is NOT fair?

Answer: _____

Question 24: Design an experiment to test if a die is fair. What would you do?

Answer: _____

Question 25: Why is it important to repeat experiments many times?

Answer: _____

Question 26: Max flips a coin 5 times and gets 5 Heads. Can he conclude the coin is unfair?

Answer: _____

Question 27: Lisa flips a coin 100 times and gets 95 Heads and 5 Tails. What should she conclude?

Answer: _____

Question 28: What is the difference between ”possible” and ”likely”?

Answer: _____

Question 29: Why do we say results have ”variation”?

Answer: _____

Question 30: True or False: Doing more trials gives you better information about fairness.

Answer: _____

Good Job!

Why do scientists enjoy experiments? Because they get results!

Fantastic! You've completed Worksheet 50!

Answer Key — Worksheet 50

Year 3 Mathematics

Section 1: Fluency

1. 10 times (out of 12)
2. Probably not fair (too many 6s)
3. 3, 4, 5
4. About 2 times (12÷6=2)
5. Yes, very different (suspicious)
6. About 10 times (60÷6=10)
7. All outcomes equally likely
8. 1 in 6 chance
9. Not necessarily (variation)
10. True

Section 2: Reasoning

11. About 10 times (40÷4=10)
12. About 10 times
13. Yes
14. About 25 times (100÷4=25)
15. All sections equal size
16. Yes, close to expected (10)
17. Red
18. Red section is larger
19. More Red
20. Check if sections are equal

Section 3: Challenge

21. Flip it many times, count Heads and Tails
22. At least 20-50 times (or more)
23. Very uneven results (e.g., 95% Heads)
24. Roll it many times, count each number
25. To reduce variation/get reliable results
26. No, 5 trials too few
27. Coin is probably unfair
28. Possible=can happen; Likely=expected to happen
29. Results differ due to chance
30. True