

An Introduction to the New NZ Maths Curriculum

Purpose of this Resource This resource is designed to highlight the significant expansion of the core topics within the New Zealand Mathematics curriculum refresh. It provides a curated selection of the primary topic areas—including Number, Algebra, Geometry, Statistics, and Probability—at the new required difficulty levels. This document serves as a tool to demonstrate the increased breadth and complexity of the curriculum and to provide a practical resource for introducing these high-level topics to students.

About the Creator This resource was developed by a passionate mathematics teacher. The intent is to bring attention to the substantial volume of content now expected of students and the heightened complexity of the material. There is a serious concern that the curriculum's current scope, when paired with the timed conditions of the Common Assessment Activity (CAA), may create insurmountable barriers for many learners, particularly those in Alternative Education (AE). This resource is provided freely to help educators navigate these new challenges.

Interactive Learning Activity: The Triple-Match Challenge

This resource is designed for use as interactive flashcards to help break down complex concepts into manageable units. To implement the **Triple-Match Challenge**:

- 1. Preparation:** Print the following pages and cut each section into three separate cards: the **Topic**, the **Question**, and the **Answer**.
- 2. The Setup:** Thoroughly shuffle all the cards and spread them out on a flat surface.
- 3. The Objective:** Students must work to correctly identify and group the three-card sets.
- 4. Matching Strategies:** Participants can complete the sets through several cognitive methods:
 - **Direct Problem Solving:** Solving the mathematical question to find the corresponding numerical answer.
 - **Thematic Matching:** Identifying conceptual similarities between the topic headings and the nature of the questions.
 - **Process of Elimination:** Using logical reasoning to narrow down matches as sets are completed.

Curriculum Areas Covered in this Set

- **Number:** Scientific notation, exponents, and fraction/decimal conversions.
- **Algebra:** Expanding brackets, factorising, and solving linear equations.
- **Measurement & Geometry:** Pythagoras' theorem, area of complex shapes, and trigonometry.
- **Statistics:** Data distributions, sampling methods, and identifying trends.
- **Probability:** Tree diagrams, two-way tables, and the Law of Large Numbers.

Topic

Number

SCIENTIFIC NOTATION (STANDARD FORM)

Question

The speed of light is roughly 300,000,000 m/s
Write this in scientific notation.

Answer

$3 \times 10^8 \text{ m/s}$



Topic

Number

CUBES AND CUBE ROOTS

Question

Q1. What is 7^3

Q2. What is $\sqrt[3]{125}$

Answer

Q1. 343

Q2. 5



Topic

Number

EXPRESS REMAINDERS AS FRACTIONS AND DECIMALS

Question

Q1. $7 \div 2$ with remainder as a fraction
Q2. $11 \div 2$ with remainder as a decimal

Answer

Q1. $3 \frac{1}{2}$
Q2. 5.5



Topic

Number

EVALUATE EXPRESSIONS USING ORDER OF OPERATIONS INCLUDING EXPONENTS

Question

$$7 + (6 \times 5^2 + 3)$$

Answer

160



Topic

Number

**DIVISION BY A FRACTION
(MULTIPLICATION BY RECIPROCAL)**

Question

$$18 \div \frac{1}{4}$$

Answer

$$18 \times 4 = 72$$



Topic

Number

DIVISION BY DECIMALS

Question

$$15 \div 0.2$$

clue: multiply both by ten

Answer

$$150 \div 2 = 75$$



Topic

Number

CONVERT FRACTIONS, DECIMALS AND PERCENTAGES

Question

Q1. Write $\frac{1}{5}$ as a decimal

Q2. Write 25% as a fraction

Q3. Write 0.67 as a percentage

Answer

Q1. 0.2

Q2. $\frac{25}{100}$ simplified to $\frac{1}{4}$

Q3. 67%



Topic

Number

ORDER FRACTIONS, DECIMALS AND PERCENTAGES

Question

Order the following from smallest to biggest:

2.5, $\frac{3}{5}$, 35%, $\frac{44}{100}$, 0.7, $\frac{6}{8}$

Answer

35%, $\frac{44}{100}$, $\frac{3}{5}$, 0.7, $\frac{6}{8}$, 2.5



Topic

Number

COMPARE FRACTIONS
(Lowest common denominator)

Question

Which is bigger: $\frac{3}{8}$ or $\frac{5}{12}$

Answer

$\frac{5}{12}$



Topic

Number

**FIND EQUIVALENT FRACTIONS,
SIMPLIFY AND CONVERT MIXED
NUMBERS AND IMPROPER FRACTIONS**

Question

- Q1. Write three equivalent fractions to $\frac{2}{4}$**
Q2. Simplify $\frac{16}{36}$
Q3. Convert $1\frac{1}{4}$ to a mixed number

Answer

- Q1. $\frac{1}{2}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \frac{20}{40}$ etc.**
Q2. $\frac{4}{9}$
Q3. $2\frac{3}{4}$



Topic

Number

**INCREASE AND DECREASE BY
FRACTIONS AND PERCENTAGES**

Question

Q1. Increase \$30 by 15%
Q2. Decrease \$40 by $\frac{1}{10}$

Answer

Q1. \$34.50
Q2. \$36



Topic

Number

**ADD, SUBTRACT AND MULTIPLY
FRACTIONS AND PERCENTAGES**

Question

Q1. $\frac{1}{2} - \frac{1}{8}$

Q2. $23\% + 14.5\%$

Q3. $15 \times 20\%$

Answer

Q1. $\frac{3}{8}$

Q2. 37.5%

Q3. 300%



Topic

Number

USE RATIOS TO SHARE UNEQUAL PROPORTIONS

Question

You have 30 lollies to share between Alice and Kahurangi in the ratio of 2:3. How many do each of them get?

Answer

12:18 Alice gets 12, Kahurangi gets 18.



Topic

Algebra

SIMPLIFY ALGEBRAIC EXPRESSIONS

Question

$$5a + a - 3$$

Answer

$$6a - 3$$



Topic

Algebra

EXPAND ALGEBRAIC EXPRESSIONS

Question

$$2a(a-3)$$

Answer

$$2a^2 - 6a$$



Topic

Algebra

FACTORISE ALGEBRAIC EXPRESSIONS

Question

$$x^2 + 4x + 3$$

Answer

$$(x+3)(x+1)$$



Topic

Algebra

SOLVE LINEAR EQUATIONS

Question

$$5x+4=19$$

Answer

$$x=3$$



Topic

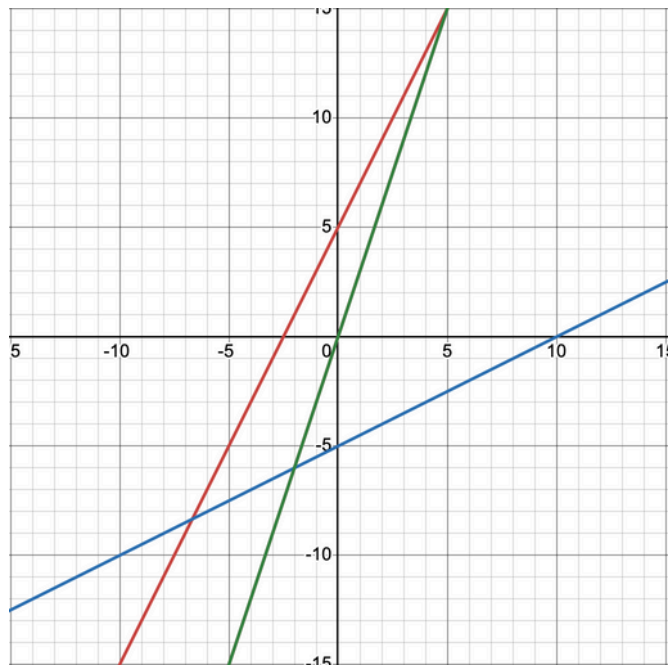
Algebra

EQUATION OF A STRAIGHT LINE ($y=mx+c$)

Question

Q1. Which line is $y=2x+5$

Q2. What is the equation of the green line?



Answer

Q1. The red line

Q2. $y=3x$

Topic

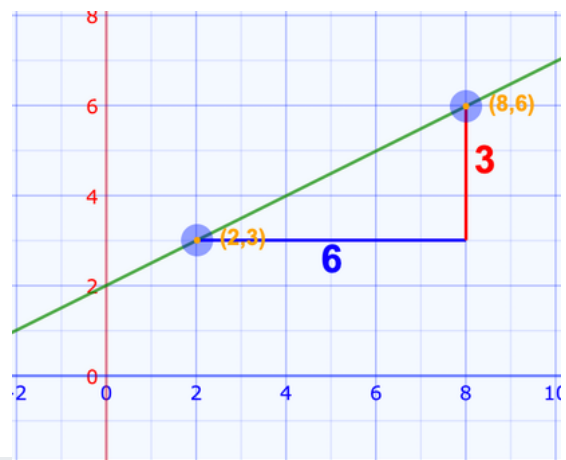
Algebra

GRADIENT OF A STRAIGHT LINE

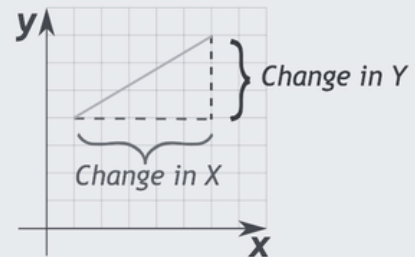
Question

Q1. What is the gradient of the line?

Q2. What is the y-intercept?



$$\text{Gradient} = \frac{\text{Change in Y}}{\text{Change in X}}$$



Answer

Q1. $3/6$ simplified to $\frac{1}{2}$ or 0.5

Q2. 2

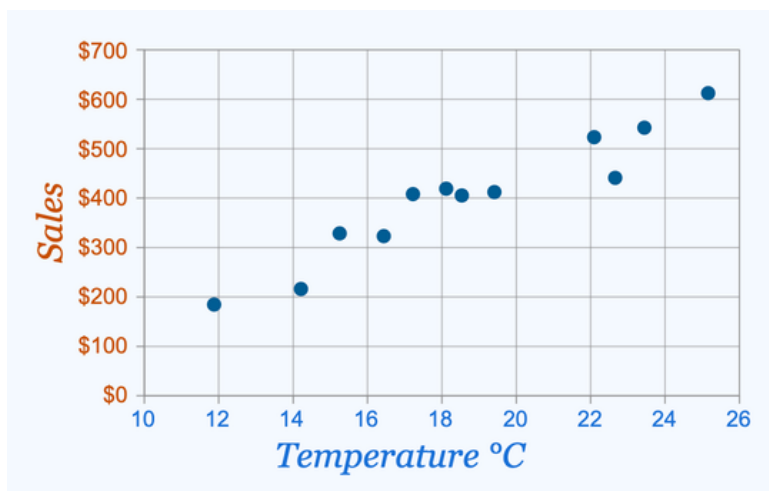
Topic

Algebra

EXPRESS LINEAR RELATIONSHIPS IN GRAPHS

Question

What is the correlation between sales and temperature: positive, negative or no correlation



Answer

**There is a positive correlation
between sales and temperature**



Topic

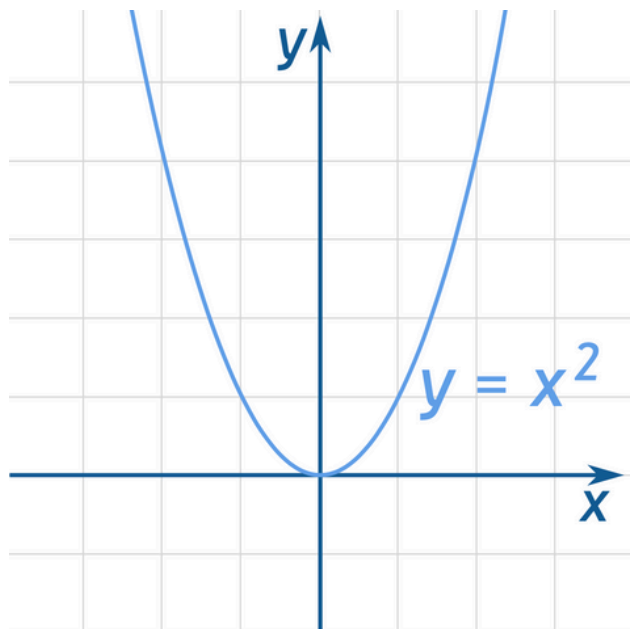
Algebra

QUADRATIC RELATIONSHIPS IN GRAPHS

Question

This graph shows
the quadratic equation
 $y=x^2$

What word best describes
the shape of the line?



Answer

It is a parabola

Topic

Measure

**CONVERT BETWEEN UNITS OF MEASUREMENT
ROUNDING TO SIGNIFICANT FIGURES AND
DECIMAL PLACES**

Question

- Q1. Convert 12.5kg to grams**
- Q2. What is 330.26ml rounded to 1 decimal place?**
- Q3. What is 36.5sec rounded to one significant figure?**

Answer

- Q1. 12,500g**
- Q2. 330.3ml**
- Q3. 40sec**



Topic

Measure

$$\text{SPEED} = \text{DISTANCE} / \text{TIME}$$

Question

**A car travels 20km in 12 minutes,
how fast is it travelling?**

Answer

100km/h



Topic

Measure

TIME ZONES AND CALENDARS

Question

Q1. The time in Sydney is 2 hours behind Auckland. What time is it in Auckland when it is 3:45pm in Sydney?

Q2. Three days ago, yesterday was the day before Sunday. What day will it be tomorrow?

Answer

Q1. 5:45pm

Q2. Thursday



Topic

Measure

MAP SCALES

Question

Q1. The distance between two towns is 15km. How far apart will they be on a map of scale 1 : 10,000?

Q2. The length of a road is 25km. How long will the road be on a map of scale 1 : 20,000?

Answer

Q1. 150cm

Q2. 125cm



Topic

Measure

COMPASS DIRECTIONS

Question



Q1. What angle do you turn through if you turn from NE to NW anticlockwise?

Q2. What angle do you turn through if you turn from E to N clockwise?

Answer

1. 90°

2. 270°

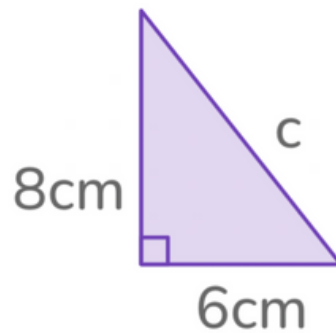
Topic

Geometry

PYTHAGORAS THEOREM ($a^2 + b^2 = c^2$)

Question

Find the missing side in the right-angled triangle:



Answer

$$c = 10\text{cm}$$

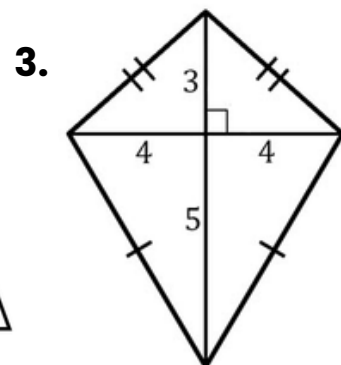
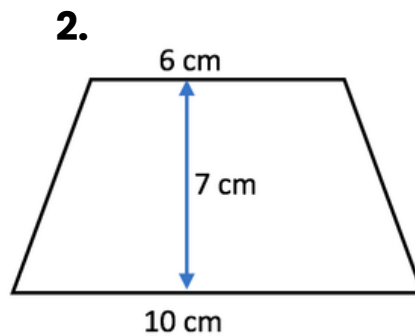
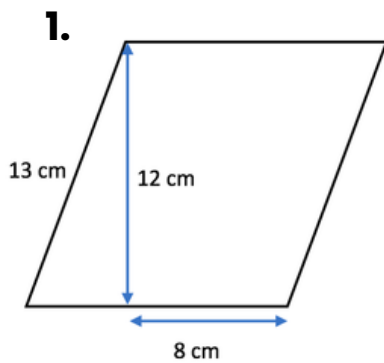
Topic

Geometry

AREA OF TWO-DIMENSIONAL SHAPES

Question

What are the areas of these three shapes:



Answer

1. 156cm^2
2. 56cm^2
3. 32units^2

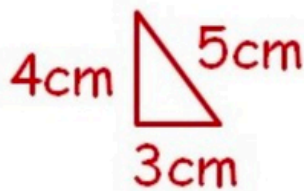
Topic

Geometry

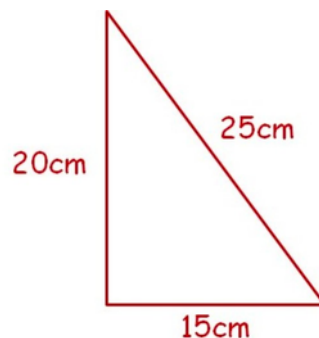
SCALE FACTORS

Question

Enlarge the triangle by a scale factor of 5:



Answer



Topic

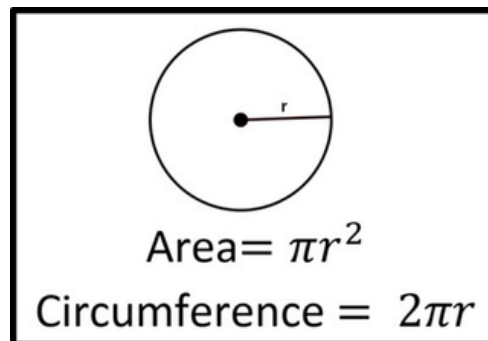
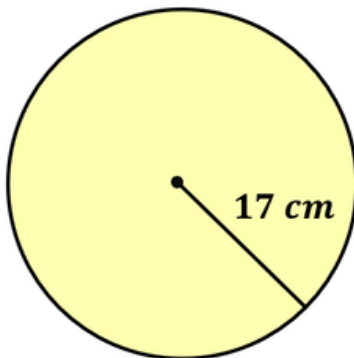
Geometry

RADIUS, CIRCUMFERENCE AND AREA OF CIRCLES

Question

What is the area and circumference of the circle:

Give your answer in terms of pi



Answer

$$\text{Area} = 289\pi \text{ cm}^2$$

$$\text{Circumference} = 34\pi \text{ cm}$$

Topic

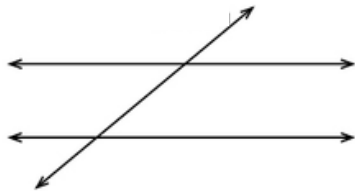
Geometry

INTERSECTING, PARALLEL AND TRANSVERSAL LINES

Question

What type of lines are these:

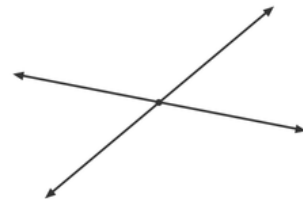
1.



2.



3.



Answer

1. Transversal
2. Parallel
3. Intersecting

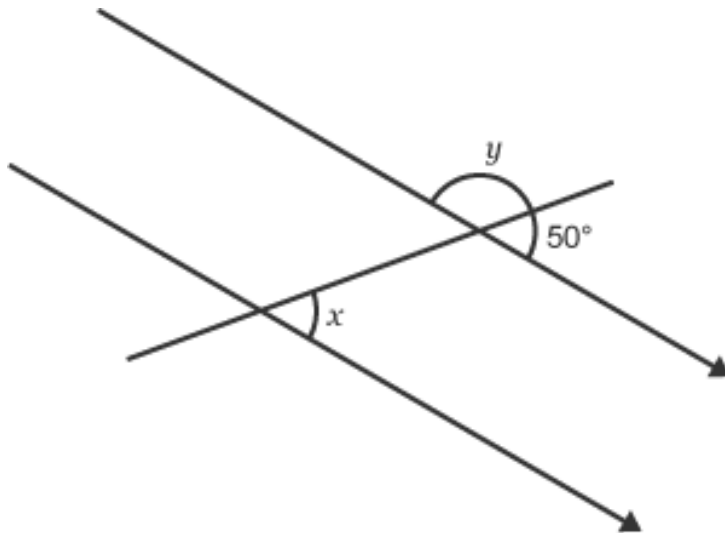
Topic

Geometry

UNKNOWN ANGLES ON LINES

Question

Find the missing angle:



Answer

$$y = 130^\circ$$

$$x = 50^\circ$$

Topic

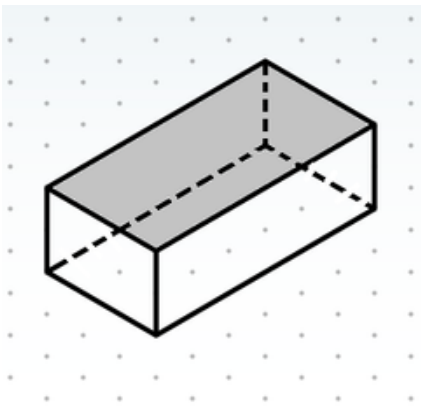
Geometry

ISOMETRIC DRAWINGS OF THREE-DIMENSIONAL SHAPES

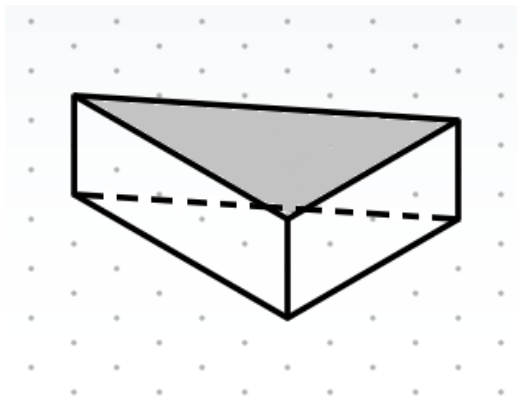
Question

Name the following 3D shapes:

1.



2.



Answer

1. Rectangular prism
2. Triangular prism

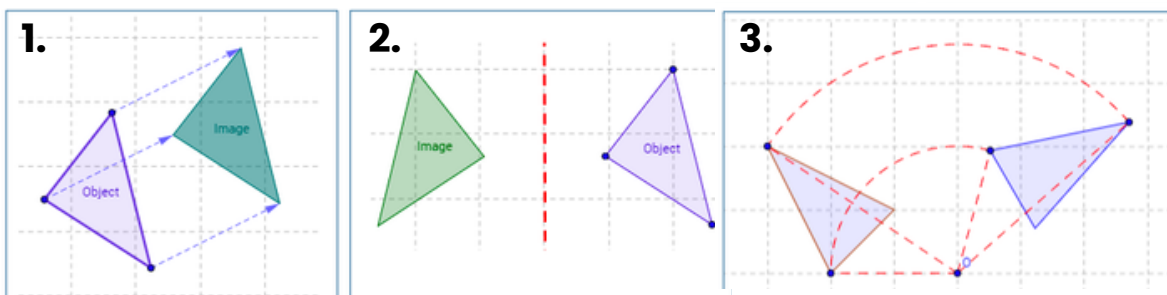
Topic

Geometry

TRANSFORMATIONS

Question

Name the transformations:



Answer

1. Translation
2. Reflection
3. Rotation

Topic







Statistics

INVESTIGATE USING DATA SETS

Question

Q1. How many more Kiku apples are sold than Ambrosia apples in kg?

Q2. What is the range of the amount of apples sold across the varieties in kg?

Variety	Amount of Apples sold (in Kg)
Fuji	
Kiku	
Golden delicious	
Red delicious	
Ambrosia	
Key :  Represents 4 Kg	

Answer

1. 4kg
2. 10kg - 16kg

Topic

Statistics

INVESTIGATE USING SAMPLES

Question

480 students attend a kura. A teacher asks 50 students which colour they would like the new school jersey to be.

Estimate how many of the 480 students would like a kākāriki jersey.

COLOUR	NUMBER OF STUDENTS
Whero	20
Kākāriki	15
Kōwhai	9
Kikorangi	6

Answer

144 students



Topic

Statistics

IDENTIFY RELEVANT FEATURES IN DISTRIBUTIONS

Question

Q1. What is the mode?

Q2. What is the outlier?

Q3. Consider the statement: The data shows us that most people scored 3 or above. Is this statement correct?



Answer

Q1. A score of 2

Q2. A score of 9

Q3. The statement is correct

Topic

Statistics

ANALYZING DATA FOR INTERQUARTILE RANGE AND LONG-TERM TREND

Question

This table represents the sales data over a 10-year period.

Year	1	2	3	4	5	6	7	8	9	10
Sales	45	52	60	64	68	71	74	78	81	85

Q1. Calculate the Interquartile Range (IQR) of the data set.

Q2. Describe the long-term trend of the sales over the 10 years: does the data suggest an overall increase or decrease in sales?

Answer

Q1. $IQR = 78 - 60 = 18$

Q2. Yes, the data suggests an overall increase in sales. Looking at the values in the table, sales start at 45 thousand units and steadily rise to 85 thousand units over the 10-year period, which indicates a positive growth trend.



Topic

Probability

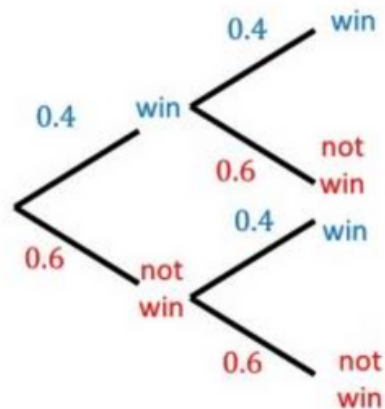
CONDUCT PROBABILITY EXPERIMENTS: TREE DIAGRAMS

Question

Here's a tree diagram that shows the Crusaders chances of winning their opening two matches

Q1. What is the probability of winning the first game and losing the second?

Q2. What is the probability of winning two games in a row?



Answer

Q1. 0.24

Q2. 0.16

Topic

Probability

CONDUCT PROBABILITY EXPERIMENTS: TALLY CHARTS

Question

Here's a tally chart that shows the favourite subject of 40 students.

Q1. What is the probability of picking a student whose favourite subject is Science?

Q2. How many more students have chosen Maths as their favourite subject, compared to Literacy

Q3. What percentage of students chose Technology as their favourite subject?

Subject	Tally	Frequency
Maths		11
Literacy		9
Science		13
Technology		7

Answer

Q1. 13/40

Q2. 2

Q3. 17.5%



Topic

Probability

IDENTIFY WHY CLAIMS ABOUT CHANCE-BASED SITUATIONS MIGHT NOT BE VALID

Question

A school principal claims that the probability of a student passing a test is 80%. However, after reviewing the data, it is found that out of 100 students, only 60 passed the test.

Why is the principal's claim about the probability of passing the test invalid?

Answer

The principal's claim of an 80% chance of passing is invalid because the actual data shows that only 60 out of 100 students passed, which is 60%. So, the correct probability of passing is 60%, not 80%.



Topic

Probability

THE LAW OF LARGE NUMBERS

Question

You flip a coin 10 times and get 7 heads and 3 tails. If you continue flipping the coin many more times, what does the Law of Large Numbers tell you about the results in the long run?

Answer

The Law of Large Numbers tells us that as you flip the coin more and more times, the proportion of heads and tails will get closer to 50% for each. In the long run, the number of heads and tails should be roughly equal.



Topic

Probability

TWO-WAY TABLES

Question

A survey of 100 students asked if they prefer coffee or tea. The results are shown in the two-way table below:

	Coffee	Tea	Total
Male	30	20	50
Female	10	40	50
Total	40	60	100

What is the probability that a student chosen at random prefers tea?

Answer

The probability is 0.6 or 60%.



Topic

Probability

CONNECT ANTICIPATED DISTRIBUTIONS WITH THEORETICAL DISTRIBUTIONS AND EXPERIMENTAL DISTRIBUTIONS

Question

You roll a fair six-sided die 120 times and record the outcomes. Theoretical probability tells us that each number (1 to 6) should appear about $1/6$ of the time. After rolling the die, you find the following results:

Outcome	1	2	3	4	5	6
Frequency	20	18	22	15	25	20

Compare the experimental distribution (your results) with the theoretical distribution. What do you notice?

Answer

Theoretical distribution expects each number to appear about 20 times (since $120/6 = 20$). The experimental results are close to this, with most numbers near 20. For example, 4 appeared 15 times and 5 appeared 25 times, but overall, the results are similar to the theoretical distribution.

