

F/T: Experimental Probability

Use the trial results to find each relative frequency.



Name _____

Date _____

Show your method

Relative frequency (experimental probability) = favourable trials $\div$ total trials. Only use the trial totals given – 30 or 1000 in every question.

Worked example A coin was flipped 30 times, shown in the table. Find the relative frequency of Heads.

Coin	Heads	Tails
Flips	16	14

Favourable trials: 16

Total trials: 30

$$\text{Relative frequency} = \frac{16}{30} = \frac{8}{15}$$

1. Find the relative frequency of rolling a six.

Solution: $\frac{4}{30} = \frac{2}{15}$

Die	Six	Not Six
Rolls	4	26

2. 1000 items were tested. Find the experimental probability an item is faulty, as a decimal.

Solution: 0.018

Item	Faulty	OK
Tested	18	982

3. A spinner was spun 30 times and landed on blue 9 times. Find the relative frequency of blue.

Solution: $\frac{9}{30} = \frac{3}{10}$

4. A survey of 1000 people found 430 prefer summer over winter. Find the experimental probability a person prefers summer, as a decimal.

Solution: 0.43

5. A coin flipped 30 times gave 13 Heads. Find the relative frequency of Tails.

Solution: $\frac{17}{30}$

6. Out of 30 seeds planted, 25 germinated. Find the experimental probability that a seed germinates.

Solution: $\frac{25}{30} = \frac{5}{6}$

7. Out of 1000 lightbulbs tested, 12 were faulty. Find the experimental probability a bulb is faulty, as a decimal.

Solution: 0.012

8. A basketball player scored on 21 of 30 attempts. Find the experimental probability of scoring.

Solution: $\frac{21}{30} = \frac{7}{10}$

9. Using the rate in Q8, predict how many scores out of 1000 attempts.

Solution: $1000 \times 0.7 = 700$

F/T: Experimental Probability (continued)

Solutions: compare, predict, and combine relative frequencies.



Name _____

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10. A die is rolled 1000 times, landing on 6 a total of 172 times. Find the experimental probability of rolling a 6, as a decimal.

Solution: 0.172

11. Compare your answer to Q10 with the theoretical probability of $\frac{1}{6} \approx 0.167$. Are they close?

Solution: Yes, 0.172 is close to 0.167

12. In 1000 trials, an event's experimental probability was 0.245. How many times did the event occur?

Solution: 245

13. In 30 trials, the relative frequency of an event was 0.4. How many times did the event occur?

Solution: 12

14. A factory tests 1000 parts and finds 25 faulty. Predict the number of faulty parts in the next 30 parts made, to 1 d.p.

Solution: 0.75

15. Explain what the Law of Large Numbers tells us about relative frequency as the number of trials increases.

Solution: It gets closer to the theoretical probability

16. A pin dropped 30 times landed point-up 19 times. The same pin dropped 1000 times landed point-up 612 times. Which result is more reliable evidence of the true probability, and why?

Solution: The 1000-trial result – larger samples reduce random variation

17. Two batches of 30 trials are combined: Batch A had 17 successes, Batch B had 14. Find the combined relative frequency out of 60 trials.

Solution: $\frac{31}{60}$

18. A weather station recorded 187 rainy days out of 1000. Predict how many rainy days would occur in the next 30 days, to the nearest whole number.

Solution: $30 \times 0.187 \approx 6$