Unit 6 · Ratios, Proportions, and Percentages Cheat Sheet

Unit 6 focus: ratios, unit rates, proportions, scale drawings and probability

1 UNIT RATES

Divide to get an amount per 1 unit.

Example: $4.32 for 12 ounces
Divide: $\frac{4.32}{12}$
Answer: $0.36 per ounce

2 SOLVING PROPORTIONS

Cross products are equal.

Example: $\frac{x}{12} = \frac{15}{20}$
Cross multiply: 20x = 180
Answer: x = 9

3 SCALE DRAWINGS

Set up a proportion: drawing to actual.

Example: Scale 1 in : 8 ft. A wall is 3.5 in on the plan.
Proportion: 3.5 × 8
Answer: 28 ft

4 SIMILAR FIGURES

Corresponding sides are proportional.

Example: Sides 4 and 6 in one figure; the matching side to 4 is 10. Find x matching 6.
Scale factor: $\frac{10}{4} = 2.5$
Answer: x = 15

5 PROBABILITY

P(event) = $\frac{\text{favorable outcomes}}{\text{total outcomes}}$

Example: A bag has 3 red, 5 blue, 2 green. P(blue)?
Count: 5 of 10
Answer: $\frac{1}{2}$

6 QUICK REMINDERS & COMMON MISTAKES

✓ Do remember

- Keep units in the same order in both ratios.
- Similar figures: same shape, proportional sides.
- Probability is between 0 and 1.

✗ Common mistakes

- Mixing up the order in a proportion: match drawing:actual on both sides
- Adding a constant to scale: multiply by the scale factor
- P(event) > 1: check your count

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More practice: percents, percent of change, markup, discount and tables

1 FRACTIONS, DECIMALS, PERCENTS

Fraction	Decimal · Percent
$\frac{3}{5}$	0.6 · 60%
$\frac{1}{8}$	0.125 · 12.5%
$\frac{5}{4}$	1.25 · 125%

2 PERCENT EQUATIONS

part = percent × whole.

Example: 45 is what percent of 60?
Divide: $\frac{45}{60} = 0.75$
Answer: 75%

3 PERCENT OF CHANGE

$\frac{\text{new} - \text{original}}{\text{original}}$; positive = increase.

Example: A price rises from $40 to $52.
Change: $\frac{12}{40} = 0.3$
Answer: 30% increase

4 MARKUP AND DISCOUNT

Sale price = original − discount. Selling price = cost + markup.

Example: A $65 jacket is 20% off.
Discount: 0.20 × 65 = 13
Sale price: 65 − 13
Answer: $52

5 USING TABLES

Hours	Earnings ($)
2	27
4	54
6	81

Constant ratio: $13.50 per hour, so the relationship is proportional.

6 CHECK YOURSELF

- Is my rate “per 1”?
- Did I divide by the ORIGINAL for percent change?
- Is my sale price less than the original?
- Are my ratios set up in the same order?