Circle Graphs

Unit 2 in one page. Percent means out of 100. A percent is a unit rate for 100, so every percent problem is a proportional relationship and one multiplier does the job.

1 THE VOCABULARY
Words we use

Percent out of 100; 30% is 30 over 100 is 0.30.

Benchmarks 50% half, 25% a fourth, 10% a tenth, 1% a hundredth.

Whole, part, percent all of it, some of it, the share out of 100; one is missing.

Multiplier 1 plus the rate to add on, 1 minus the rate to take off.

Percent change change divided by the original.

Circle graph 100% is 360 degrees.

- Watch out for these.
- Dividing by the new amount instead of the original.
- Adding percents that stack.
- Multiplying by the rate when you wanted the total: 0.07 is the tax, 1.07 is the total.
- Forgetting percent of what when working backward.

2 THE METHOD
The whole unit

1. THREE PIECES name the whole, the part, and the percent; find the missing one on the bar.
2. ONE MULTIPLIER add on: times 1 plus the rate. Take off: times 1 minus the rate. More than one change: in order.
3. PERCENT CHANGE change divided by the original, then to a percent.
4. DEGREES percent of 360 gives degrees; degrees out of 360 gives the percent.

WHY IT IS ALL UNIT 1
A unit rate is how much for 1. A percent is how much for 100. Every percent problem multiplies by the same number, so every one is a proportional relationship.



Elle, math-speak: A proportional relationship always multiplies by the same number, the unit rate.



Finn, plain English: Percent means out of 100. A percent is a unit rate for 100 instead of for 1: 30 percent means 30 for every 100.

3 ONE OF EACH
Seven lessons, seven lines

$30\% = \frac{30}{100} = 0.30$	three ways to write it
40% of $35 = 35 \times 0.40 = 14$; 30% is \$45, so 100% is \$150	the part, and the whole
$\$40 \times 1.07 = \$42.80$	tax: add on
$\$60 \times 0.70 = \$42$	a discount: pay what is left
$\frac{15}{50} = 30\%$ decrease; $70 \times 1.10 = 77$	percent change, and a new amount
$\$100 \times 1.10 \times 0.90 = \$99$	more than one change
$\frac{54}{360} = 15\%$; 15% of 2,400 = 360	a circle graph read backward

THE EXIT TICKET
72 out of 360 is 20 percent, and 20 percent of 50 students is 10.

SAY IT OUT LOUD
Percent means out of 100.