Do Now

Fill in the table below.

Fraction (simplest form)	Decimal	Percent
$\frac{2}{100} = \frac{1}{50}$	.02	2%
$\frac{6}{100} = \frac{3}{50}$	0.06	6%
$\frac{1}{1000}$	0.001	.1%

Lesson #33 – Finding Percents using the Percent Proportion

The **percent proportion** allows us to compare ratios to something out of 100.

$$\frac{\text{Part (is)}}{\text{Whole (of)}} = \frac{\%}{100}$$

The key to using the percent proportion is identifying the part (is) and the whole (of)

Example 1) Identify the "whole" (of) in each situation.

Scenario	Whole Unit
15 is what percent of 90?	90
What number is 10% of 56?	56
A bag of candy contains 300 pieces and 25% of the pieces in the bag are red.	300
Seventy percent (70%) of the students earned a B on the test.	total Students (x)
The 20 girls in the class represented 55% of the students in the class.	total Students (x)
90% of a number is 180.	the # (x)

Example 2) Read each problem and complete the table to record what you know.

Problem	Percent	Part	Whole	Proportion
40% of the students on the field trip love the museum. If there are 20 students on the field trip, how many love the museum?	40%	X	20	$\frac{X}{20}=\frac{40}{100}$
40% of the students on the field trip love the museum. If 20 students love the museum, how many are on the field trip?	40%	20	X	$\frac{20}{X}=\frac{40}{100}$
20 students on the field trip love the museum. If there are 40 students on the field trip, what percent love the museum?	X	20	40	$\frac{20}{40}=\frac{X}{100}$

Example 3) Set up a proportion. Solve the following percents.

A) What number is 40% of 90?

Part (is) = X

Whole (of) = 90

% = 40

$\frac{X}{90}=\frac{40}{100}$

$\frac{100X}{100}=\frac{3600}{100}$

$X=36$

B) 18 is 30% of what number?

Part (is) = 18

Whole (of) = X

% = 30

$\frac{18}{X}=\frac{30}{100}$

$\frac{30X}{30}=\frac{1800}{30}$

$X=60$

C) 25.5 is what percent of 85?

Part (is) = 25.5

Whole (of) = 85

% = X

$\frac{25.5}{85}=\frac{X}{100}$

$\frac{85X}{85}=\frac{255}{85}$

$X=3$

Example 4) In TJ's math class, 20% of students earned an A on a test. If there were 30 students in the class, how many got an A?

Percent: 20

Part: X

Whole: 30

$\frac{X}{30}=\frac{20}{100}$

$\frac{100X}{100}=\frac{6000}{100}$

$X=60$ got an A

5) In Arianna's art class, 12% of the Flag Day art projects received a perfect score. There were 25 art projects turned in by Arianna's class. How many of the art projects earned a perfect score?

Percent: 12
Part: x
Whole: 25

$\frac{x}{25} = \frac{12}{100}$ $\frac{100x}{100} = \frac{300}{100}$

x = 3 projects

6) In Justin's English class, 70% of the students completed an essay by the due date. There are 30 students in Justin's English class. How many completed the essay by the due date?

Percent: 70
Part: x
Whole: 30

$\frac{x}{30} = \frac{70}{100}$ $\frac{100x}{100} = \frac{2100}{100}$

x = 21 Students

7) A bag of candy contains 300 pieces of which 28% are red. How many pieces are red?

Part: x
Whole: 300
%: 28

$\frac{x}{300} = \frac{28}{100}$ $\frac{100x}{100} = \frac{8400}{100}$

x = 84 red pieces

8) A bag of candy contains 300 pieces of which 28% are red. How many pieces are not red?

A) What percent represents the number of pieces that are not red?

100 − 28 = 72% not red

B) Use a proportion to find the number of pieces of candy that are not red.

$\frac{x}{300} = \frac{72}{100}$ $\frac{100x}{100} = \frac{21600}{100}$

x = 216

9) Zoey inflated 24 balloons for decorations at the middle school dance. If Zoey inflated 15% of the balloons for the dance, how many balloons are there total? Solve the problem using the percent proportion.

$\frac{24}{x} \times \frac{15}{100}$ $\frac{15x}{15} = \frac{2400}{15}$

$x = 160$ total

10) Ryan is making admission tickets to the middle school dance. So far he has made 112 tickets, and his plan is to make 320 tickets. What percent of the admission tickets has Ryan produced so far?

$\frac{112}{320} \times \frac{x}{100}$ $\frac{320x}{320} = \frac{11200}{320}$

$x = 35$ tix