1. Use this conditional:

If ten is divided by any number, then the result is a number less than ten.

a. State the hypothesis.

ten ÷ by any #

b. State the conclusion.

< 10

c. Is this conditional true? If not, give a counterexample.

not

10 ÷ 1 < 10

2. Use this conditional: If you're late for work, then you'll get fired.

Model this conditional with a Venn Diagram.

3. Use this conditional: If a figure is a triangle, then it has three sides.

a. Is this conditional true? If not, give a counterexample.

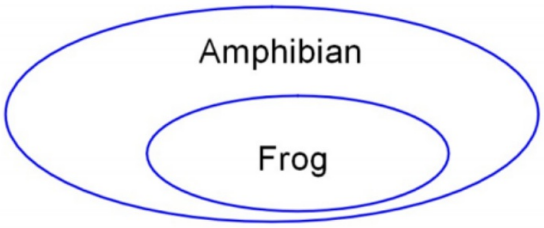
True

b. Write the converse of this conditional.

If a figure has 3 sides, then it's a Δ.

c. Is the converse true? If not, give a counterexample.

4. Write this conditional represented by the Venn Diagram.



If an animal is a frog, then it's an amphibian.

Answers to HW #8

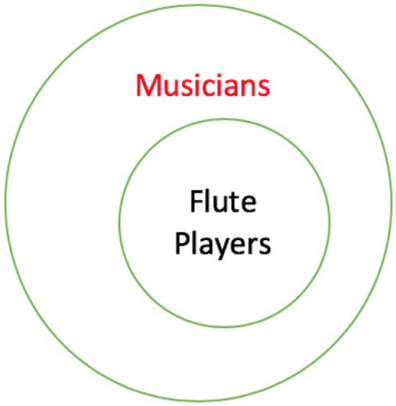
9. If an object is glass, then it is fragile.

12. If something is an obtuse angle, then it has a measure greater than 90.

16. 9

18. Answers may vary. Ex: softball

20.



28. Converse: If the coordinates of a point are positive, then it is in the first quadrant. Both statements are true.

29. Converse: If the chemical formula for a substance is H_2O, then it is water. Both statements are true.

33. If a person is an Olympian, then that person is an athlete.

36. a. if x^2 is an integer divisible by 3, then x is an integer divisible by 3. b. The converse is false. Counterexample: If $x^2 = 3$, then $x = \sqrt{3}$ and $\sqrt{3}$ is not an integer divisible by 3.

49. If a figure has four congruent angles, then it is a square; false, a rectangle is not a square.

54. If two lines intersect, then they meet in exactly one point.

Write each sentence as a conditional.

9. Glass objects are fragile.

10. Algebra $3x - 7 = 14$ implies that $3x = 21$.

29. Chemistry If a substance is water, then its chemical formula is H_2O.

factor are even.

12. All obtuse angles have measure greater than 90.

Show that each conditional is false by finding a counterexample.

36. Error Analysis Ellen claims that both this conditional and its converse are true.
If x is an integer divisible by 3, then x^2 is an integer divisible by 3.

a. Write the converse of the conditional.

es, then you live in Canada.

the statements is true. Determine which statement is false and
nterexample to support your answer.

y baseball.

ment.

Write each postulate as a conditional statement.

54. Two intersecting lines meet in exactly one point.

19. If you live in New England, then you live in the United States.

20. If you play the flute, then you are a musician.

Write the converse of each conditional statement. Determine the truth values of the original conditional and its converse.

27. If you travel from the United States to Kenya, then you have a passport.

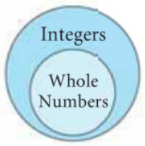
28. Coordinate Geometry If a point is in the first quadrant, then its coordinates

Write a conditional statement that each Venn diagram illustrates.

33.

34.

35.



Reading Math **Let statements *p*, *q*, and *r* be as follows.**

***p*: A figure is square.** ***q*: A figure has four congruent angles.**

***r*: A figure has four congruent sides.**

Write the words for the symbolic statement shown. Determine the truth value of the statement. If it is false, provide a counterexample.

48. $p \rightarrow q$ **49.** $q \rightarrow p$ **50.** $r \rightarrow q$ **51.** $(q \text{ and } r) \rightarrow p$

If your birthday is in August, then you were born in the summer.

Conditional: another name for an "if-then" statement

Hypothesis: the "if" part of a conditional

Conclusion: the "then" part of a conditional

Truth Value of a conditional:

the outcome of a conditional is either True or False

To show a conditional is true
you must show that every time the hypothesis is true, the conclusion is also true.

To show a conditional is false
you only need to find one example for which it is not true (counterexample)

Find the truth value of this conditional.

If a number is a multiple of 4, then it is even

There is an infinite number of multiples of 4 so how can you prove this statement is true?

By inductive reasoning you've reached this conclusion so this conditional is only a conjecture.

Inductive Reasoning: reasoning based on patterns you notice from many observations.

Counterexample: Example(s) that show a conjecture is false.

Conjecture: The sum of the digits of any multiple of nine is also a multiple of nine.

Is this conjecture true or false.

If false, give a counterexample

Conjecture:

If you square any number, then the resulting number is greater than the original number.

Is this conjecture true or false.

If false, give a counterexample

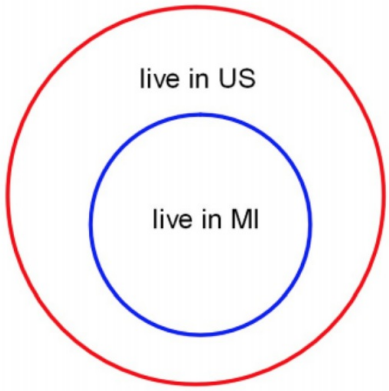
because

$1^2 = 1$

and the number you end up with is equal to what you started with.

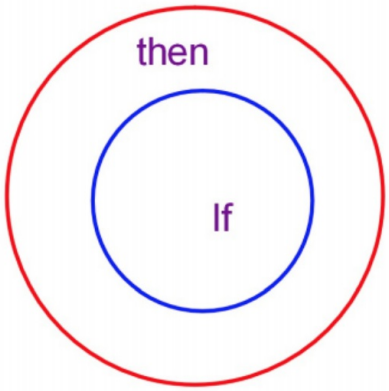
Representing a conditional with a Venn Diagram:

If you live in Michigan, then you live in the US.

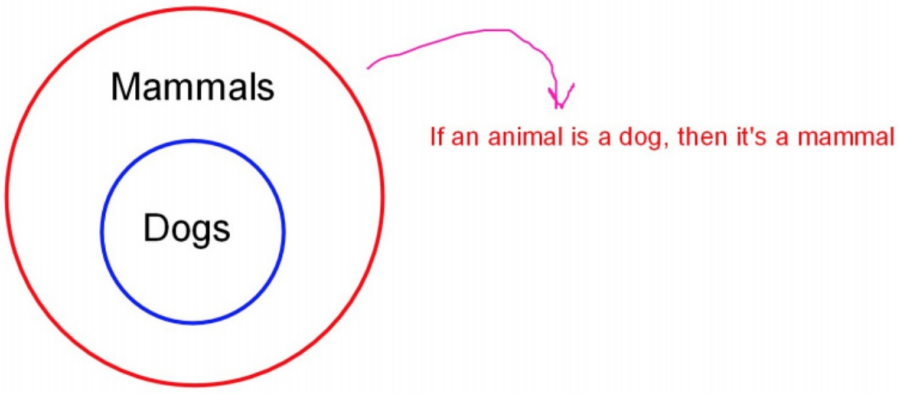


A generic if-then statement:

In words:	In symbols
"If p, then q"	$p \rightarrow q$



Write a conditional represented by the Venn Diagram



Converse of a conditional

A conditional that switches the hypothesis and conclusion.

If a number is a multiple of 4, then it is even

Is this statement true or false? True

Write the converse of this conditional. if a # is even, then it's a mult. of 4.

Is the converse true? If not, give a counterexample. false b/c. 6 is even but not a mult of 4.

Write a conditional whose converse is false.

Converse: If you live in Canada, then you live in Ontario

False, because you could live in Canada but live in Nova Scotia not Ontario.

Write a conditional whose converse is true:

Example:

Conditional: If a number is a multiple of two, then it's even.

Converse: If a number is even, then it is a multiple of two.

given this conditional:

$p \longrightarrow q$

Write the converse in symbols:

$q \rightarrow p$

Classwork: Practice 2-1 Worksheet

IXL #3 - B.7 & C.3 due Friday at 4pm!