

TRIANGLE SORT

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Classifying triangles is an activity explored at the intermediate level which can cause some students difficulty. For those students a game can provide motivation while providing reinforcement in learning how to classify triangles.

"Triangle Sort" is a game in which players who recognize that a triangle can be classified either by its sides or by its angles are rewarded with better scores. Since definitions vary slightly from textbook to textbook, definitions should be reviewed prior to playing the game. The definitions used in this set of materials are:

Classifying by angles:

Acute Triangles have all angles less than 90 degrees.

Obtuse Triangles have one angle more than 90 degrees.

Right Triangles have one angle of exactly 90 degrees.

Classifying by sides:

Equilateral Triangles have three congruent sides.

Isosceles Triangles have at least two congruent sides. (Some texts use the definition "only two congruent sides". For our purposes we will use "at least two congruent sides". A player who can recognize that an equilateral triangle also meets this definition has the opportunity to score with either classification card.)

Scalene Triangles have no sides congruent.

Shape cards and classification cards are mounted on heavy paper and carefully cut apart. The cut out triangular shapes are placed in the Game Bag. (Any opaque bag large enough for the students to put a hand into will do for the Game Bag.)

The game is designed for two students. Each student will select two Classification Cards: one an "angle card" and the other a "side card". The equilateral card is to be a "wild card". It is placed face up in the middle of the table and either player may play on the equilateral card after making a selection from the Game Bag. A player who is able to use the "wild card" gets extra points. These points, added to the score, are "extra points" in that a player did not receive them from the two Classification Cards.

The object of the game is to classify the triangles as they are selected from the Game Bag. Students should be able to feel the triangle shapes. This will help them select triangle shapes by feeling angles or sides. Once the triangle shape is removed from the bag the student will try to match the triangle with the Classification Card. If the triangle can be matched to BOTH Classification Cards, the player scores two points. Any triangle not matched must be returned to the Game Bag. Each player selects five triangles and matches the Classification Cards or returns unmatched triangles to the Game Bag.

Game Simulation

Player 1 chooses one angle and one side card from the Classification pack, RIGHT TRIANGLE and SCALENE TRIANGLE. The player will try to select a triangle from the Game Bag to fit these two classifications.

Player 2 picks ACUTE TRIANGLE and ISOSCELES TRIANGLE from the remaining face down cards. These are the cards being matched.

Player 1 draws triangles B, Y, F, AA, and G from the Game Bag. Recognizing that triangle G is a right triangle, player 1 is awarded one point. Player 1 also recognizes triangle F and AA are scalene triangles and is awarded a point for each, for a score of three. Keeping triangles G, F, and AA, player 1 puts triangles B and Y back into the Game Bag.

Player 2 now takes a turn and feels for triangles to fit the Classification Cards, ACUTE and ISOSCELES. Player 2 is awarded points for any triangle matched with the Classification Cards.

The game continues until a preselected point level (10, 15, etc.) is reached by one of the players. Or, if all of the triangles are matched the game ends.

Other Alternatives

A time limit could be used on the game. The student accruing the most points at the end of the time period is declared the winner. A time limit might also be imposed during the game in order to speed up the students as they classify their triangles. After the player draws the triangles s/he has 30 seconds (use an egg timer) to classify the five triangles. Any triangles not successfully classified will be returned to the Game Bag.

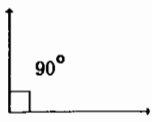
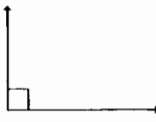
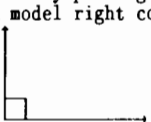
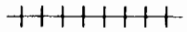
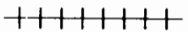
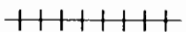
Another alternative would be to have students draw just one triangle at a time and see if it matches the Classification Cards they have in their possession. This

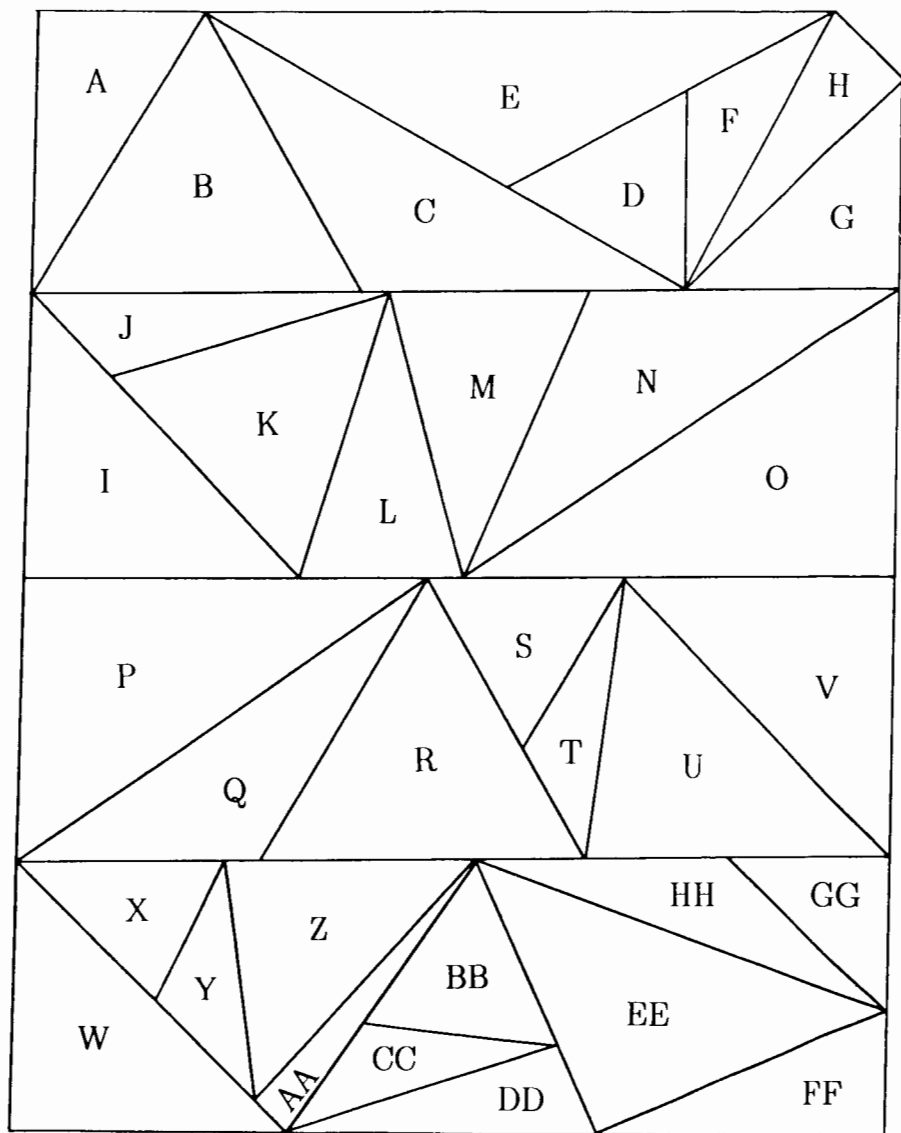
may speed the game up, since it gets the players involved more quickly.

ANSWER KEY

<u>RIGHT</u>	<u>ACUTE</u>	<u>OBTUSE</u>	<u>EQUILATERAL</u>	<u>ISOSCELES</u>	<u>SCALENE</u>
A	B	C	B	C	A
G	D	E	D	G	E
H	K	F	K	I	F
I	L	J	R	L	H
O	M	N	S	N	J
P	R	Q	BB	W	M
V	S	T		X	O
W	U	Y		Y	P
EE	X	AA		Z	Q
FF	BB	CC		EE	T
GG	EE	DD		GG	U
		HH			V
					AA
					CC
					DD
					FF
					HH

CLASSIFICATION CARDS

<p>RIGHT TRIANGLE One angle of exactly 90°</p> 	<p>OBTUSE TRIANGLE One obtuse angle ($> 90^\circ$)</p> 	<p>ACUTE TRIANGLE All acute angles ($< 90^\circ$) (check by placing corners on model right corner)</p> 
<p>EQUILATERAL TRIANGLE All three sides congruent</p> <p>WILD CARD</p> 	<p>ISOSCELES TRIANGLE Two sides congruent</p> 	<p>SCALENE TRIANGLE No sides congruent</p> 



Enlarge and laminate.