Math 367 Homework Assignment 3
SOLUTIONS

7.
Upper left corner: translation
Upper right corner: reflection
Lower left corner: reflection
Lower right corner: reflection, rotation, translation (in any order)

(Note: Other answers are possible. Any isometry is a composition of at most 3 reflections, and there are many compositions of isometries that are equal to a given one.)

10.
$\{A, H, S, V, X\}$, $\{B, E, K, W, Y\}$, $\{C, G, O, Q, U\}$, $\{D, F, J, N, R\}$, $\{I, L, M, P, T\}$
There are 5 congruence classes. (The instructions ask these to be denoted instead by circles with the letters written inside.)

11.
Answers will vary! But, for example:
$\{A, H, S, V, X\}$: One twin pair in a corner, with no isolated point next to it.
$\{C, G, O, Q, U\}$: One twin pair not in a corner.
$\{D, F, J, N, R\}$: Two twin pairs, not three isolated points in a row.
$\{I, L, M, P, T\}$: One twin pair in a corner, with an isolated point next to it.

15.
(i) BD
(ii) $\{C\}$ (the answer C, without set braces, is okay, but technically it should be written this way since it is a set)
(iii) $\overrightarrow{AC}$
(iv) $\overleftrightarrow{CD}$ (this may also be written as $\overleftrightarrow{BC}$ etc.)
(v) AC
(vi) $\overrightarrow{BD}$ (this may also be written as $\overrightarrow{BC}$)

16.
translation, reflection (Other answers are possible. This answer is, in more detail, to translate the $\triangle ABC$ so that point A coincides with point Y. Then reflect over the line containing Y and parallel to $\overleftrightarrow{XZ}$. But this level of detail is not required for this problem.)