Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_

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| **What you need to know & be able to do** | **Things to remember** | **Problem** | **Problem** |
| Translations | * Find the new coordinates by adding/ subtracting the given value. * Find the pre-image by doing the OPPOSITE. * A translation is a rigid motion which means the pre-image and image are congruent | 1. Translate the following points by the rule:   D (-5, 2)→\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  O(-4, 5)→\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  G (-1, 1)→\_\_\_\_\_\_\_\_\_\_\_\_\_\_  S(-4, -2)→\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. Translation: (x, y) → (x – 2, y – 6)   **Graph pre-image and image.**  **C(3, 2) A(2, 4) T(3, 5) S(5,2)** |
| Reflections | * Reflect over x-axis: (x, -y) * Reflect over y-axis: (-x, y) * Reflect across y = x (switch x and y) * Reflect across y = -x (switch x and y AND change their signs) | 1. Reflect across y = x | 1. Reflect across y = -x then reflect across the y-axis |
| Rotations | * 90CW/270CCW: (y, -x) * 180: (-x, -y) * 90CCW/270CW: (-y, x) * **“drive the car”: the fist that goes over the other is the sign that changes; switch the order.** | 1. Rotate the figure 90 CW | 1. Rotate the figure 90 CCW |
| Dilations | * Multiply the coordinates by the given scale factor (k) * Pre-image and image are NOT congruent; they are similar. * Dilations are NOT rigid motions | 1. A. Find the coordinates of the new vertices of the image that has been dilated by a factor of 5.   R (-4, 5)→  A(-1, 1)→  T (-4, -2)→   1. [http://www.glencoe.com/sec/math/studytools/books/0-07-888484-5/images/Chapter_9_Lesson_0_5.jpg](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCJXcqrf2t8cCFYodPgodgk0FdA&url=http://www.glencoe.com/sec/math/studytools/cgi-bin/msgQuiz.php4?isbn%3D0-07-888484-5%26chapter%3D9%26lesson%3D0%26title%3Dcrq%26%26headerFile%3DX&ei=YuvVVZWjCoq7-AGCm5WgBw&bvm=bv.99804247,d.cWw&psig=AFQjCNGu6vyDBAF9TMspMYvcpkZOC1GeRw&ust=1440169146517649)Find the coordinates of the new vertices of the image that has been dilated by a factor of 1/2.   U(2, 4)→  R(4,-6)→  P(-2, 2)→ | 1. Find the scale factor of the outside image if the inside figure is the pre-image. (smaller to larger) >>> see next page |
| Multiple  Transformations | * ORDER IS IMPORTANT * Use the *previous* ordered pairs to do the next transformation. | 1. Given the points   **M (-3, 1) S (5, -2)**  Translate: (x – 3, y + 2)  Reflect: over y -axis  M’ →  S’ →  M’’ →  S’’ → | 1. Given the points   **K (0, -4) P (-6, -3) R (1, 2)**  Reflect: over the x-axis  Rotate: 270 CCW  K’ →  P’ →  R’ →  K’’ →  P’’ →  R’’ → |
| Angles of a triangle | * Angles add up to 180 * The exterior angle of a triangle is equal to the sum of the 2 remote interior angles | 1. The angles of a triangle measure x+14, 4x – 2, and 5x +8. Solve for x and find the 3 angle measures.   X=\_\_\_\_\_\_\_\_\_\_\_\_  Angles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. Given the sides lengths, find the interval of the 3rd side   a. 5 and 8  b. 10 and 11 |
| 1. [http://www.freemathhelp.com/images/lessons/exterior2.gif](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCLam04GStscCFYU5Pgod1jUGqA&url=http://www.freemathhelp.com/feliz-exterior-triangle.html&ei=3vvUVba_EoXz-AHW65jACg&bvm=bv.99804247,d.cWw&psig=AFQjCNE7zW319ZgdfyNrgjdfBuAE3GwzzQ&ust=1440107864238812)   X = \_\_\_\_\_\_\_\_\_ | 1. [http://www.andrews.edu/~calkins/math/webtexts/g79b15a.jpg](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCKT76qOStscCFUVuPgod0kwD-g&url=http://www.andrews.edu/~calkins/math/webtexts/geom03.htm&ei=JfzUVeTUPMXc-QHSmY3QDw&bvm=bv.99804247,d.cWw&psig=AFQjCNE7zW319ZgdfyNrgjdfBuAE3GwzzQ&ust=1440107864238812)   X= |
| Special angle relationships | * Parallel lines cut by a transversal forms congruent and supplementary angles * Angle relationships can be vertical, adjacent, alternate interior, alternate exterior, corresponding, same-side interior, and same-side exterior. | **15.**  [http://media.wiley.com/Lux/62/272462.image19.jpg](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCKK-q_6UtscCFYImPgodZw4HmA&url=http://www.dummies.com/how-to/content/applying-the-transversal-theorems.html&ei=_P7UVaLQKILN-AHnnJzACQ&bvm=bv.99804247,d.cWw&psig=AFQjCNH8MYaXoXwJuppnlbzpxOqX2eZfFQ&ust=1440108660270741)  Congruent angles:  1 and \_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_  2 and \_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_  Supplementary angles:  Angle 1 and \_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_  Angle 2 and \_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_  **16**.If <3 = 2x + 20 and <5=3x+45, solve for x and find angles 5 and 3.  **X=\_\_\_\_\_\_\_\_**  **<3=\_\_\_\_\_\_\_**  **<5=\_\_\_\_\_\_\_**  **17.** a. Solve for x.  [https://dr282zn36sxxg.cloudfront.net/datastreams/f-d%3Aca38ab0710d052576dd2f77a26c9dbd478f26fe51964cfe9e67c547c%2BIMAGE%2BIMAGE.1](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCLXkjbqsuMcCFcWXHgodXN8O4g&url=https://www.ck12.org/geometry/Alternate-Interior-Angles/lesson/Alternate-Interior-Angles/?referrer%3Dfeatured_content&ei=ByTWVfXEHsWvety-u5AO&psig=AFQjCNHc83e4aKacqnICy9sVvxiBEnUsWQ&ust=1440183673437278)  **18.** If m<5=110, find    m<8= \_\_\_\_\_\_\_\_ m<4=\_\_\_\_\_\_  m<2=\_\_\_\_\_\_\_\_\_m<7=\_\_\_\_\_\_\_  [https://dr282zn36sxxg.cloudfront.net/datastreams/f-d%3A2b8a8a37433afc31835e2172dc271de0e1a504f0f5e5b2a47f05dfad%2BIMAGE%2BIMAGE.1](http://www.ck12.org/geometry/Alternate-Exterior-Angles/lesson/Alternate-Exterior-Angles---Intermediate/) | **19**.Relationships:  Angles 1and 8:  Angles1and 5:  Angles 4 and 8:  Angles 3 and 6:  Angles 7and 6:  Angles 7 and 8:  Angles 3 and 5:  Angles 2 and 8:  **20.** If <6 =82 and <3 =2x+10, find x and angles 6 and 3.  **X=\_\_\_\_\_\_\_\_m<6=\_\_\_\_\_\_**  **m<3=\_\_\_\_\_\_\_\_**  **21.** Solve for x.https://www.learningpod.com/apiproxy/content/d5ac5557-a31b-48f1-84a9-bd9a6c4a4951  **22**. a. If <A = 110, find the angles the arrows are pointing to.  [http://hotmath.com/hotmath_help/topics/parallel-lines-and-transversals/graph1.gif](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCNCcp7zet8cCFUkaPgod_cgACA&url=http://hotmath.com/hotmath_help/topics/parallel-lines-and-transversals.html&ei=QtLVVdDzCMm0-AH9kYNA&bvm=bv.99804247,d.cWw&psig=AFQjCNEtCYGSBhuZ-JHTj8pG1C4d2kyPlA&ust=1440162584296186) |