Geometry Common Core Regents Exam January 2019

Exam: Begins on page 20 in your booklet or you can download it:
https://www.nysedregents.org/geometryre/119/geom12019-exam.pdf

Complete the following questions: 1-4, 6-8, 10, 12, 13, 15-17, 21, 25, 26, 28, 30, 32, 33

Please attempt to do the questions BEFORE looking at the hints below. If you're still unable to complete the question after reading the hints, look at the video answer keys:
#1-12 https://www.youtube.com/watch?v=qyYw99cQaTM&list=PL2yFA19ccrlJVjGfkk2h-iqUPwNSQvrFO&index=4&t=0s
#13-24 https://www.youtube.com/watch?v=YqgYiJFJ9X4
#25-30 https://www.youtube.com/watch?v=1l897_5ZAVw
#31-35 https://www.youtube.com/watch?v=hoEQgo1aGsY

After watching the video answer key, you should attempt to do the question YOURSELF before moving on. Keep a list of questions you are unable to complete. Feel free to email me for further assistance.

Hints:
#1 – The scale factor is the image divided by the pre-image. If the scale factor is greater than 1, we have an enlargements, if its less than 1 and greater than 0, we have a reduction.

#2 – Determine the side of ΔABC that corresponds to side $\overline{DE}$ and set it equal to $2x - 1$, then solve for x.

#3 – Since size has not been preserved, one of the transformations must be a dilation. Check orientation to see if it's preserved – if it is, there is no reflection.

#6 - The Side-Splitter theorem states if a segment is parallel to one side of a triangle, it divides the other two sides proportionally. Also forms two similar triangles. $\Delta ABC \sim \Delta DBE$.

#7 – Draw the diagram. Diagonals of a rhombus are perpendicular (divides the rhombus into 4 right triangles). Use the Pythagorean theorem to find the length of one side of the rhombus, then multiply it by 4 to get the perimeter.

#8 – If you find all the missing angles, you'll see all the corresponding angles are congruent and hence the two triangles are similar, therefore the corresponding sides are proportional.

#10 – Use the mean proportional altitude theorem to find the length of $\overline{GM}$, then use the mean proportional side theorem to find $\overline{IM}$.

#12 – some of the properties listed are not true for ALL parallelograms.

#13 – Trig questions but it contains different units. Draw a diagram and convert everything to feet since the choices are in feet. Reference sheet in the front of your book has conversions (1mile = 5280 feet).
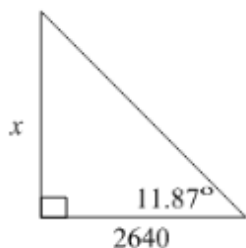
$$0.5 \text{ miles} = 0.5 \ (5280) = 2640 \text{ feet}$$

#15 - To partition a line segment , use graph paper. Find the horizontal change between the segment endpoints and divide it by the number of parts needed (since the ratio is 1:2, you'll need to divide by 3). Then identify the point on the line dividing the segment into 1 part and 3 parts.

#16 – An exterior angle equals the sum of the two remote interior angles.

#17 - – Identify the sides of the triangle with respect to the given angle (opposite, adjacent, hypotenuse), select the appropriate trig ratio (SOH CAH TOA).

#21 – The area of a triangle is the base times the height divided by two. The base and height must be perpendicular to each other. Definitions: a median is drawn to the midpoint of the opposite side, an altitude is perpendicular to the side to which it's drawn.

#25 – Parallel lines have equal slopes. Put the given equations into slope-intercept form $y = mx + b$ in order to determine the slope. Once you have the slope and a point the line passes through, use the point-slope formula $(y - y_1) = m(x - x_1)$.

#26 – Some useful definitions and properties: opposite sides of a parallelogram are parallel, if two parallel lines are cut by a transversal, the corresponding angles are congruent, opposite angles of parallelograms are congruent, consecutive angles of a parallelogram are supplementary, vertical angles are congruent. There are number of different ways to do this question.

#28 - Determine if the orientation has been preserved. If not, then you know one of the transformations must have been a reflection.

#30 - A median is drawn to the midpoint of the opposite side. This question is asking if G is the midpoint of $\overline{DF}$. Calculate the midpoint of $\overline{DF}$.

#32 – Prove the triangle is isosceles by using the distance formula to show two sides have the same lengths. Prove the triangle is a right triangle by finding the length of the third side and showing Pythagorean theorem holds true OR show two sides are perpendicular by showing their slopes are negative reciprocals of each other.

#34 – Divide the diagram up and focus on the right triangle. Use trig ratios to find the missing sides.

Part A
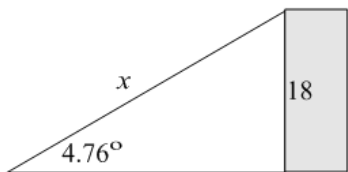
Part B

Find *y,* then subtract 16 to get the length of *d.*