GEOMETRY (COMMON CORE)

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

GEOMETRY (Common Core)

Wednesday, August 12, 2015 — 8:30 to 11:30 a.m., only

Student Name: _________________________________________________________

School Name: _______________________________________________________________

Print your name and the name of your school on the lines above.

A separate answer sheet for Part I has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 36 questions. You must answer all questions in this examination. Record your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers to the questions in Parts II, III, and IV directly in this booklet. All work should be written in pen, except for graphs and drawings, which should be done in pencil. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale.

The formulas that you may need to answer some questions in this examination are found at the end of the examination. This sheet is perforated so you may remove it from this booklet.

Scrap paper is not permitted for any part of this examination, but you may use the blank spaces in this booklet as scrap paper. A perforated sheet of scrap graph paper is provided at the end of this booklet for any question for which graphing may be helpful but is not required. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will not be scored.

When you have completed the examination, you must sign the statement printed at the end of the answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet cannot be accepted if you fail to sign this declaration.

Notice...
A graphing calculator, a straightedge (ruler), and a compass must be available for you to use while taking this examination.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.
Part I

Answer all 24 questions in this part. Each correct answer will receive 2 credits. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question. [48]

1 A parallelogram must be a rectangle when its
   (1) diagonals are perpendicular
   (2) diagonals are congruent
   (3) opposite sides are parallel
   (4) opposite sides are congruent

2 If △A′B′C′ is the image of △ABC, under which transformation will the triangles not be congruent?
   (1) reflection over the x-axis
   (2) translation to the left 5 and down 4
   (3) dilation centered at the origin with scale factor 2
   (4) rotation of 270° counterclockwise about the origin

3 If the rectangle below is continuously rotated about side w, which solid figure is formed?

   ![Rectangle](image)

   (1) pyramid
   (2) rectangular prism
   (3) cone
   (4) cylinder

4 Which expression is always equivalent to \( \sin x \) when \( 0° < x < 90° \)?
   (1) \( \cos (90° - x) \)
   (2) \( \cos (45° - x) \)
   (3) \( \cos (2x) \)
   (4) \( \cos x \)
5 In the diagram below, a square is graphed in the coordinate plane.

A reflection over which line does not carry the square onto itself?

(1) $x = 5$
(2) $y = 2$
(3) $y = x$
(4) $x + y = 4$

6 The image of $\triangle ABC$ after a dilation of scale factor $k$ centered at point $A$ is $\triangle ADE$, as shown in the diagram below.

Which statement is always true?

(1) $2AB = AD$
(2) $AD \perp DE$
(3) $AC = CE$
(4) $BC \parallel DE$
7 A sequence of transformations maps rectangle $ABCD$ onto rectangle $A'B''C''D''$, as shown in the diagram below.

Which sequence of transformations maps $ABCD$ onto $A'B'C'D'$ and then maps $A'B'C'D'$ onto $A''B''C''D''$?

(1) a reflection followed by a rotation
(2) a reflection followed by a translation
(3) a translation followed by a rotation
(4) a translation followed by a reflection

8 In the diagram of parallelogram $FRED$ shown below, $ED$ is extended to $A$, and $AF$ is drawn such that $AF = DF$.

If $m \angle R = 124^\circ$, what is $m \angle AFD$?

(1) $124^\circ$  
(2) $112^\circ$  
(3) $68^\circ$  
(4) $56^\circ$
9 If \( x^2 + 4x + y^2 - 6y - 12 = 0 \) is the equation of a circle, the length of the radius is

(1) 25  
(2) 16  
(3) 5  
(4) 4

10 Given \( \overline{MN} \) shown below, with \( M(-6,1) \) and \( N(3,-5) \), what is an equation of the line that passes through point \( P(6,1) \) and is parallel to \( \overline{MN} \)?

(1) \( y = \frac{-2}{3}x + 5 \)  
(2) \( y = \frac{-2}{3}x - 3 \)  
(3) \( y = \frac{3}{2}x + 7 \)  
(4) \( y = \frac{3}{2}x - 8 \)

11 Linda is designing a circular piece of stained glass with a diameter of 7 inches. She is going to sketch a square inside the circular region.

To the nearest tenth of an inch, the largest possible length of a side of the square is

(1) 3.5  
(2) 4.9  
(3) 5.0  
(4) 6.9
12 In the diagram shown below, $AC$ is tangent to circle $O$ at $A$ and to circle $P$ at $C$, $OP$ intersects $AC$ at $B$, $OA = 4$, $AB = 5$, and $PC = 10$.

What is the length of $BC$?

(1) 6.4  (3) 12.5
(2) 8  (4) 16

13 In the diagram below, which single transformation was used to map triangle $A$ onto triangle $B$?

(1) line reflection  (3) dilation
(2) rotation  (4) translation
14 In the diagram below, \( \triangle DEF \) is the image of \( \triangle ABC \) after a clockwise rotation of 180º and a dilation where \( AB = 3 \), \( BC = 5.5 \), \( AC = 4.5 \), \( DE = 6 \), \( FD = 9 \), and \( EF = 11 \).

Which relationship must always be true?

1. \( \frac{m\angle A}{m\angle D} = \frac{1}{2} \)
2. \( \frac{m\angle C}{m\angle F} = \frac{2}{1} \)
3. \( \frac{m\angle A}{m\angle C} = \frac{m\angle F}{m\angle D} \)
4. \( \frac{m\angle B}{m\angle E} = \frac{m\angle C}{m\angle F} \)

15 In the diagram below, quadrilateral \( ABCD \) is inscribed in circle \( P \).

What is \( m\angle ADC \)?

1. \( 70º \)
2. \( 72º \)
3. \( 108º \)
4. \( 110º \)
16 A hemispherical tank is filled with water and has a diameter of 10 feet. If water weighs 62.4 pounds per cubic foot, what is the total weight of the water in a full tank, to the nearest pound?

(1) 16,336 
(2) 32,673 
(3) 130,690 
(4) 261,381

17 In the diagram below, \( \triangle ABC \sim \triangle ADE \).

Which measurements are justified by this similarity?

(1) \( AD = 3, AB = 6, AE = 4, \) and \( AC = 12 \)
(2) \( AD = 5, AB = 8, AE = 7, \) and \( AC = 10 \)
(3) \( AD = 3, AB = 9, AE = 5, \) and \( AC = 10 \)
(4) \( AD = 2, AB = 6, AE = 5, \) and \( AC = 15 \)

18 Triangle \( FGH \) is inscribed in circle \( O \), the length of radius \( \overline{OH} \) is 6, and \( \overline{FH} \equiv \overline{OG} \).

What is the area of the sector formed by angle \( FOH \)?

(1) \( 2\pi \)
(2) \( \frac{3}{2}\pi \)
(3) \( 6\pi \)
(4) \( 24\pi \)
As shown in the diagram below, $\overline{AB}$ and $\overline{CD}$ intersect at $E$, and $AC \parallel BD$.

Given $\triangle AEC \sim \triangle BED$, which equation is true?

(1) $\frac{CE}{DE} = \frac{EB}{EA}$
(2) $\frac{AE}{BE} = \frac{AC}{BD}$
(3) $\frac{EC}{AE} = \frac{BE}{ED}$
(4) $\frac{ED}{EC} = \frac{AC}{BD}$

A triangle is dilated by a scale factor of 3 with the center of dilation at the origin. Which statement is true?

(1) The area of the image is nine times the area of the original triangle.
(2) The perimeter of the image is nine times the perimeter of the original triangle.
(3) The slope of any side of the image is three times the slope of the corresponding side of the original triangle.
(4) The measure of each angle in the image is three times the measure of the corresponding angle of the original triangle.

The Great Pyramid of Giza was constructed as a regular pyramid with a square base. It was built with an approximate volume of 2,592,276 cubic meters and a height of 146.5 meters. What was the length of one side of its base, to the nearest meter?

(1) 73
(2) 77
(3) 133
(4) 230
A quadrilateral has vertices with coordinates \((-3,1), (0,3), (5,2),\) and \((-1,-2).\) Which type of quadrilateral is this?

(1) rhombus  
(2) rectangle  
(3) square  
(4) trapezoid

In the diagram below, \(\triangle ABE\) is the image of \(\triangle ACD\) after a dilation centered at the origin. The coordinates of the vertices are \(A(0,0), B(3,0), C(4.5,0), D(0,6),\) and \(E(0,4).\)

The ratio of the lengths of \(BE\) to \(CD\) is

(1) \(\frac{2}{3}\)  
(2) \(\frac{3}{2}\)  
(3) \(\frac{3}{4}\)  
(4) \(\frac{4}{3}\)

Line \(y = 3x - 1\) is transformed by a dilation with a scale factor of 2 and centered at \((3,8).\) The line's image is

(1) \(y = 3x - 8\)  
(2) \(y = 3x - 4\)  
(3) \(y = 3x - 2\)  
(4) \(y = 3x - 1\)
25 A wooden cube has an edge length of 6 centimeters and a mass of 137.8 grams. Determine the density of the cube, to the nearest thousandth.

State which type of wood the cube is made of, using the density table below.

<table>
<thead>
<tr>
<th>Type of Wood</th>
<th>Density (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pine</td>
<td>0.373</td>
</tr>
<tr>
<td>Hemlock</td>
<td>0.431</td>
</tr>
<tr>
<td>Elm</td>
<td>0.554</td>
</tr>
<tr>
<td>Birch</td>
<td>0.601</td>
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<tr>
<td>Ash</td>
<td>0.638</td>
</tr>
<tr>
<td>Maple</td>
<td>0.676</td>
</tr>
<tr>
<td>Oak</td>
<td>0.711</td>
</tr>
</tbody>
</table>
26 Construct an equilateral triangle inscribed in circle $T$ shown below.
[Leave all construction marks.]
27 To find the distance across a pond from point B to point C, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point B to point C, to the nearest yard.
28 In parallelogram $ABCD$ shown below, diagonals $AC$ and $BD$ intersect at $E$.

Prove: $\angle ACD \cong \angle CAB$
29 Triangles $RST$ and $XYZ$ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \cong \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.
30 In the diagram below, \( \triangle ABC \) and \( \triangle XYZ \) are graphed.

Use the properties of rigid motions to explain why \( \triangle ABC \cong \triangle XYZ \).
31 The endpoints of $\overline{DEF}$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point $E$, if $DE:EF = 2:3$. 
32 As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.
Triangle $ABC$ has vertices with $A(x, 3)$, $B(-3, -1)$, and $C(-1, -4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]
34 In the diagram below, \( AC \equiv DF \) and points \( A, C, D, \) and \( F \) are collinear on line \( \ell \).

Let \( \triangle DEF \) be the image of \( \triangle DEF \) after a translation along \( \ell \), such that point \( D \) is mapped onto point \( A \). Determine and state the location of \( F' \). Explain your answer.

Let \( \triangle D'E'F' \) be the image of \( \triangle DEF \) after a reflection across line \( \ell \). Suppose that \( E'' \) is located at \( B \). Is \( \triangle DEF \) congruent to \( \triangle ABC \)? Explain your answer.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.
Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter's profit after selling 100 candles?
### High School Math Reference Sheet

1 inch = 2.54 centimeters  
1 meter = 3.937 inches  
1 mile = 5280 feet  
1 mile = 1760 yards  
1 mile = 1.609 kilometers  
1 kilometer = 0.62 mile  
1 pound = 16 ounces  
1 pound = 0.454 kilogram  
1 ton = 2000 pounds  
1 cup = 8 fluid ounces  
1 pint = 2 cups  
1 quart = 2 pints  
1 gallon = 4 quarts  
1 gallon = 3.785 liters  
1 liter = 0.264 gallon  
1 liter = 1000 cubic centimeters

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<tr>
<th>Shape</th>
<th>Formula</th>
<th>Pythagorean Theorem</th>
<th>Quadratic Formula</th>
<th>Arithmetic Sequence</th>
<th>Geometric Sequence</th>
<th>Geometric Series</th>
<th>Radians</th>
<th>Degrees</th>
<th>Exponential Growth/Decay</th>
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<td>Triangle</td>
<td>$A = \frac{1}{2}bh$</td>
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<td>$A = A_0e^{kt} + B_0$</td>
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<td>Parallelogram</td>
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<td>General Prisms</td>
<td>$V = Bh$</td>
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<td>Cylinder</td>
<td>$V = \pi r^2h$</td>
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<td>Sphere</td>
<td>$V = \frac{4}{3}\pi r^3$</td>
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<td>Cone</td>
<td>$V = \frac{1}{3}\pi r^2h$</td>
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<td>Pyramid</td>
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Scrap Graph Paper — This sheet will not be scored.
FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

GEOMETRY (COMMON CORE)

Wednesday, August 12, 2015 — 8:30 to 11:30 a.m., only

SCORING KEY AND RATING GUIDE

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Regents Examination in Geometry (Common Core). More detailed information about scoring is provided in the publication Information Booklet for Scoring the Regents Examination in Geometry (Common Core).

Do not attempt to correct the student’s work by making insertions or changes of any kind. In scoring the open-ended questions, use check marks to indicate student errors. Unless otherwise specified, mathematically correct variations in the answers will be allowed. Units need not be given when the wording of the questions allows such omissions.

Each student’s answer paper is to be scored by a minimum of three mathematics teachers. No one teacher is to score more than approximately one-third of the open-ended questions on a student’s paper. Teachers may not score their own students’ answer papers. On the student’s separate answer sheet, for each question, record the number of credits earned and the teacher’s assigned rater/scorer letter.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Raters should record the student’s scores for all questions and the total raw score on the student’s separate answer sheet. Then the student’s total raw score should be converted to a scale score by using the conversion chart that will be posted on the Department’s web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, August 12, 2015. Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student’s final score. The student’s scale score should be entered in the box provided on the student’s separate answer sheet. The scale score is the student’s final examination score.
If the student’s responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

**Part I**

Allow a total of 48 credits, 2 credits for each of the following. Allow credit if the student has written the correct answer instead of the numeral 1, 2, 3, or 4.

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Updated information regarding the rating of this examination may be posted on the New York State Education Department’s web site during the rating period. Check this web site at: [http://www.p12.nysed.gov/assessment/](http://www.p12.nysed.gov/assessment/) and select the link “Scoring Information” for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

Beginning in June 2015, the Department is providing supplemental scoring guidance, the “Model Response Set,” for the Regents Examination in Geometry (Common Core). This guidance is intended to be part of the scorer training. Schools should use the Model Response Set along with the rubrics in the Scoring Key and Rating Guide to help guide scoring of student work. While not reflective of all scenarios, the Model Response Set illustrates how less common student responses to constructed-response questions may be scored. The Model Response Set will be available on the Department’s web site at: [http://www.nysedregents.org/Geometrycc/](http://www.nysedregents.org/Geometrycc/).
General Rules for Applying Mathematics Rubrics

I. General Principles for Rating

The rubrics for the constructed-response questions on the Regents Examination in Geometry (Common Core) are designed to provide a systematic, consistent method for awarding credit. The rubrics are not to be considered all-inclusive; it is impossible to anticipate all the different methods that students might use to solve a given problem. Each response must be rated carefully using the teacher's professional judgment and knowledge of mathematics; all calculations must be checked. The specific rubrics for each question must be applied consistently to all responses. In cases that are not specifically addressed in the rubrics, raters must follow the general rating guidelines in the publication Information Booklet for Scoring the Regents Examination in Geometry (Common Core), use their own professional judgment, confer with other mathematics teachers, and/or contact the State Education Department for guidance. During each Regents Examination administration period, rating questions may be referred directly to the Education Department. The contact numbers are sent to all schools before each administration period.

II. Full-Credit Responses

A full-credit response provides a complete and correct answer to all parts of the question. Sufficient work is shown to enable the rater to determine how the student arrived at the correct answer.

When the rubric for the full-credit response includes one or more examples of an acceptable method for solving the question (usually introduced by the phrase “such as”), it does not mean that there are no additional acceptable methods of arriving at the correct answer. Unless otherwise specified, mathematically correct alternative solutions should be awarded credit. The only exceptions are those questions that specify the type of solution that must be used; e.g., an algebraic solution or a graphic solution. A correct solution using a method other than the one specified is awarded half the credit of a correct solution using the specified method.

III. Appropriate Work

Full-Credit Responses: The directions in the examination booklet for all the constructed-response questions state: “Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc.” The student has the responsibility of providing the correct answer and showing how that answer was obtained. The student must “construct” the response; the teacher should not have to search through a group of seemingly random calculations scribbled on the student paper to ascertain what method the student may have used.

Responses With Errors: Rubrics that state “Appropriate work is shown, but…” are intended to be used with solutions that show an essentially complete response to the question but contain certain types of errors, whether computational, rounding, graphing, or conceptual. If the response is incomplete; i.e., an equation is written but not solved or an equation is solved but not all of the parts of the question are answered, appropriate work has not been shown. Other rubrics address incomplete responses.

IV. Multiple Errors

Computational Errors, Graphing Errors, and Rounding Errors: Each of these types of errors results in a 1-credit deduction. Any combination of two of these types of errors results in a 2-credit deduction. No more than 2 credits should be deducted for such mechanical errors in a 4-credit question and no more than 3 credits should be deducted in a 6-credit question. The teacher must carefully review the student’s work to determine what errors were made and what type of errors they were.

Conceptual Errors: A conceptual error involves a more serious lack of knowledge or procedure. Examples of conceptual errors include using the incorrect formula for the area of a figure, choosing the incorrect trigonometric function, or multiplying the exponents instead of adding them when multiplying terms with exponents.

If a response shows repeated occurrences of the same conceptual error, the student should not be penalized twice. If the same conceptual error is repeated in responses to other questions, credit should be deducted in each response.

For 4- and 6-credit questions, if a response shows one conceptual error and one computational, graphing, or rounding error, the teacher must award credit that takes into account both errors. Refer to the rubric for specific scoring guidelines.
Part II

For each question, use the specific criteria to award a maximum of 2 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(25)  [2]  Ash is stated, and correct work is shown.

  [1]  Appropriate work is shown, but one computational or rounding error is made.

    or

  [1]  Appropriate work is shown, but one conceptual error is made.

    or

  [1]  Appropriate work is shown to find the density, but the wood choice is missing or is incorrect.

    or

  [1]  0.638 or Ash, but no work is shown.

  [0]  A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(26)  [2]  A correct construction is drawn showing all appropriate arcs.

  [1]  Appropriate arcs are marked on the circle, but the triangle is not drawn.

  [0]  A drawing that is not an appropriate construction is shown.

    or

  [0]  A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
(27)  [2]  164, and correct work is shown.

[1] Appropriate work is shown, but one computational or rounding error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] A correct proportion to find $BC$ is written, but no further correct work is shown.

or

[1] 164, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(28)  [2] A complete and correct proof that includes a concluding statement is written.

[1] Only one relevant correct statement and reason are written.

or

[1] One conceptual error is made.

[0] The “given” and/or the “prove” statements are written, but no further correct relevant statements are written.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(29)  [2] The triangles are similar, and a correct justification is stated.

[1] Appropriate work is shown, but one computational error is made. An appropriate justification is stated.

or

[1] Appropriate work is shown, but one conceptual error is made.

[0] The triangles are similar, but no justification is stated.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
A correct explanation is written to explain why $\triangle ABC \cong \triangle XYZ$.

An appropriate explanation is written, but one conceptual error is made.

or

An appropriate explanation is written, but is incomplete.

A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(31)

$\langle 7,8 \rangle$, and correct work is shown.

Appropriate work is shown, but one computational error is made.

or

Appropriate work is shown, but one conceptual error is made.

or

Appropriate work is shown to find 7 and 8, but the answer is not written as coordinates.

or

$\langle 7,8 \rangle$, but no work is shown.

A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
Part III

For each question, use the specific criteria to award a maximum of 4 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(32)  [4] 582, and correct work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made.

or

[3] Correct work is shown to find the lengths of both $\overline{AC}$ and $\overline{DC}$, but they are not subtracted.

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] Correct work is shown to find the length of either $\overline{AC}$ or $\overline{DC}$, but no further correct work is shown.

or

[2] $\frac{125}{\tan 7} = \frac{125}{\tan 16}$, or an equivalent to find $AD$ is written, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.

or

[1] $\tan 7 = \frac{125}{AC}$ and $\tan 16 = \frac{125}{DC}$ are written, but no further correct work is shown.

or

[1] 582, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
(33) [4] 3 or 9.5, and correct work is shown.

[3] Appropriate work is shown, but one computational or graphing error is made.

[2] Appropriate work is shown, but two or more computational or graphing errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

[1] Appropriate work is shown, but one conceptual error and one computational or graphing error are made.

or

[1] Appropriate work is shown to find \(\frac{2}{3}\), the slope of a line perpendicular to \(BC\).

No further correct work is shown.

or

[1] 3 or 9.5, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(34) [4] Point C, and a correct explanation is written. Yes, and a correct explanation is written.

[3] Point C, but the explanation is incorrect or missing. Yes, and a correct explanation is written.

or

[3] Point C, and a correct explanation is written. Yes, but the explanation is incorrect.

[2] One conceptual error is made.

or

[2] Point C, and a correct explanation is written. No further correct work is shown.

or

[2] Yes, and a correct explanation is written. No further correct work is shown.

[1] Point C is written, with no further correct work.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
Part IV

For each question, use the specific criteria to award a maximum of 6 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(35)  [6] A complete and correct proof that includes a conclusion is written.

[5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement or reason is missing or is incorrect.

[4] A proof is written that demonstrates a good understanding of the method of proof and contains no conceptual errors, but two statements or reasons are missing or are incorrect.

or

[4] \(\triangle BEC \cong \triangle DFC\) is proven, but no further correct work is shown.

[3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.

or

[3] \(\angle BEC \cong \angle DFC\) and \(\angle C \cong \angle C\) are proven, but no further correct work is shown.

[2] A proof is written that demonstrates a method of proof, but one conceptual error is made, and one statement or reason is missing or is incorrect.

or

[2] Some correct relevant statements about the proof are made, but three or four statements or reasons are missing or are incorrect.

or

[2] \(\angle BEC \cong \angle DFC\) is proven, but no further correct work is shown.

[1] Only one correct relevant statement and reason are written.

[0] The “given” and/or the “prove” statements are written, but no further correct relevant statements are written.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[6] 1885, $98.02, and $59.15, and correct work is shown.

[5] Appropriate work is shown, but one computational or rounding error is made.

[4] Appropriate work is shown, but two computational or rounding errors are made.

or

[4] Appropriate work is shown, but one conceptual error is made.

or

[4] Correct work is shown to find 1885 and $98.02, but no further correct work is shown.

[3] Appropriate work is shown, but three or more computational or rounding errors are made.

or

[3] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.

[2] Appropriate work is shown, but one conceptual error and two or more computational or rounding errors are made.

or

[2] Appropriate work is shown, but two conceptual errors are made.

or

[2] Correct work is shown to find 1885, but no further correct work is shown.

[1] Appropriate work is shown, but two conceptual errors and one computational or rounding error are made.

or

[1] Correct work is shown to find the volume of one candle. No further correct work is shown.

or

[1] 1885, $98.02, and $59.15, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
<table>
<thead>
<tr>
<th>Question</th>
<th>Type</th>
<th>Credits</th>
<th>Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-CO.C</td>
</tr>
<tr>
<td>2</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-CO.B</td>
</tr>
<tr>
<td>3</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-GMD.B</td>
</tr>
<tr>
<td>4</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-SRT.C</td>
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<tr>
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<td>9</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-GPE.A</td>
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<td>10</td>
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<td>2</td>
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<td>Multiple Choice</td>
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<td>2</td>
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<td>2</td>
<td>G-C.A</td>
</tr>
<tr>
<td>16</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-MG.A</td>
</tr>
<tr>
<td>17</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-SRT.A</td>
</tr>
<tr>
<td>18</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-C.B</td>
</tr>
<tr>
<td>19</td>
<td>Multiple Choice</td>
<td>2</td>
<td>G-SRT.B</td>
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<td>G-GPE.B</td>
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<td>23</td>
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</tr>
<tr>
<td>25</td>
<td>Constructed Response</td>
<td>2</td>
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<tr>
<td>26</td>
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<td>2</td>
<td>G-CO.D</td>
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<td></td>
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<td>Standard</td>
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</table>
The Chart for Determining the Final Examination Score for the August 2015 Regents Examination in Geometry (Common Core) will be posted on the Department’s web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, August 12, 2015. Conversion charts provided for previous administrations of the Regents Examination in Geometry (Common Core) must NOT be used to determine students’ final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:


2. Select the test title.

3. Complete the required demographic fields.

4. Complete each evaluation question and provide comments in the space provided.

5. Click the SUBMIT button at the bottom of the page to submit the completed form.
25 A wooden cube has an edge length of 6 centimeters and a mass of 137.8 grams. Determine the density of the cube, to the nearest thousandth.

State which type of wood the cube is made of, using the density table below.

<table>
<thead>
<tr>
<th>Type of Wood</th>
<th>Density (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pine</td>
<td>0.373</td>
</tr>
<tr>
<td>Hemlock</td>
<td>0.431</td>
</tr>
<tr>
<td>Elm</td>
<td>0.554</td>
</tr>
<tr>
<td>Birch</td>
<td>0.601</td>
</tr>
<tr>
<td>Ash</td>
<td>0.638</td>
</tr>
<tr>
<td>Maple</td>
<td>0.676</td>
</tr>
<tr>
<td>Oak</td>
<td>0.711</td>
</tr>
</tbody>
</table>

Score 2: The student has a complete and correct response.
A wooden cube has an edge length of 6 centimeters and a mass of 137.8 grams. Determine the density of the cube, to the nearest thousandth.

State which type of wood the cube is made of, using the density table below.

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</tr>
<tr>
<td>Oak</td>
<td>0.711</td>
</tr>
</tbody>
</table>

\[
D = \frac{m}{V}
\]

\[
D = \frac{137.8}{6^3}
\]

\[
D = 0.637962963
\]

Score 1: The student found the density of the wood, but did not state which type of wood the cube is made of.
A wooden cube has an edge length of 6 centimeters and a mass of 137.8 grams. Determine the density of the cube, to the nearest thousandth.

State which type of wood the cube is made of, using the density table below.

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<td>0.676</td>
</tr>
<tr>
<td>Oak</td>
<td>0.711</td>
</tr>
</tbody>
</table>

Score 0: The student’s response was completely incorrect.
26 Construct an equilateral triangle inscribed in circle $T$ shown below.

[Leave all construction marks.]

**Score 2:** The student drew a correct construction showing all appropriate construction marks.
26 Construct an equilateral triangle inscribed in circle $T$ shown below.

[Leave all construction marks.]

**Score 2:** The student drew a correct construction showing all appropriate arcs.
26 Construct an equilateral triangle inscribed in circle $T$ shown below.
[Leave all construction marks.]

Score 1: The student constructed an equilateral triangle, but did not have it inscribed in circle $T$. 
26 Construct an equilateral triangle inscribed in circle $T$ shown below.

[Leave all construction marks.]

**Score 0:** The student made an incorrect construction.
27 To find the distance across a pond from point $B$ to point $C$, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point $B$ to point $C$, to the nearest yard.

\[
\frac{120}{230} = \frac{x}{315}
\]

\[
27,800 = 230x
\]

\[
x \approx 124.34785261
\]

\[
B \to C \approx 164 \text{ yards}
\]

**Score 2:** The student has a complete and correct response.
To find the distance across a pond from point B to point C, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point B to point C, to the nearest yard.

\[ \frac{120}{46} \times \frac{63}{164.3} = \frac{63}{46} \]

\[ BC = 164.50 \text{ yd} \]

Score 2: The student used a simplified ratio for \( \frac{AC}{AE} \) and solved arithmetically.
27 To find the distance across a pond from point B to point C, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point B to point C, to the nearest yard.

Score 1: The student made one computational error when multiplying 120 and 315.
Question 27

To find the distance across a pond from point $B$ to point $C$, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point $B$ to point $C$, to the nearest yard.

Score 1:  The student made an error by assuming $BD = EC$, but found an appropriate length for $BC$. 
To find the distance across a pond from point $B$ to point $C$, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point $B$ to point $C$, to the nearest yard.

Score 1: The student set up the proportion incorrectly, but found an appropriate length for $BC$. 
27 To find the distance across a pond from point $B$ to point $C$, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.

Use the surveyor's information to determine and state the distance from point $B$ to point $C$, to the nearest yard.

Score 0: The student’s response was completely incorrect.
28 In parallelogram $ABCD$ shown below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at $E$.

Prove: $\angle ACD \equiv \angle CAB$

<table>
<thead>
<tr>
<th>statements</th>
<th>reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) $ABCD$ is a parallelogram, diag. $\overline{AC}$ and $\overline{BD}$ intersect at $E$</td>
<td>Given</td>
</tr>
<tr>
<td>2) $\overline{DC} \parallel \overline{AB}$, $\overline{DA} \parallel \overline{CB}$</td>
<td>opp. sides of a parallelogram are $\parallel$</td>
</tr>
<tr>
<td>3) $\angle ACD \equiv \angle BAC$</td>
<td>if $\parallel$ lines are cut by a transversal, then alt. int. $\angle$s are $\equiv$.</td>
</tr>
</tbody>
</table>

Score 2: The student has written a complete and correct proof.
28 In parallelogram $ABCD$ shown below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at $E$.

Prove: $\angle ACD \equiv \angle CAB$

<table>
<thead>
<tr>
<th>Statement</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) $\overline{AC}$ and $\overline{BD}$ intersect at $E$</td>
<td>1) Given</td>
</tr>
<tr>
<td>2) $\overline{AB} \parallel \overline{DC}$</td>
<td>2) Opposite sides of a parallelogram are parallel</td>
</tr>
<tr>
<td>3) $\angle ACD \equiv \angle BAC$</td>
<td>3) Parallel lines cut by a transversal form alternate interior angles</td>
</tr>
</tbody>
</table>

Score 1: The student wrote one correct statement and reason.
Question 28

28 In parallelogram $ABCD$ shown below, diagonals $AC$ and $BD$ intersect at $E$.

Prove: $\angle ACD \cong \angle CAB$

<table>
<thead>
<tr>
<th>Statements</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parallelogram $ABCD$ given</td>
<td>1. Parallelogram $ABCD$ given</td>
</tr>
<tr>
<td>2. Diagonals $AC$ and $BD$ intersect at $E$</td>
<td>2. Diagonals $AC$ and $BD$ intersect at $E$</td>
</tr>
<tr>
<td>3. $AC \cong BD$</td>
<td>3. $AC \cong BD$</td>
</tr>
<tr>
<td>4. $\angle ACD \cong \angle BAC$</td>
<td>4. $\angle ACD \cong \angle BAC$</td>
</tr>
<tr>
<td>5. Alternate interior angles are congruent in a parallelogram</td>
<td>5. Alternate interior angles are congruent in a parallelogram</td>
</tr>
</tbody>
</table>

Score 0: The student only wrote the given correctly.
29 Triangles $RST$ and $XYZ$ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \equiv \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.

Score 2: The student has a complete and correct response.
29 Triangles $RST$ and $XYZ$ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \equiv \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.

$\frac{14}{21} = \frac{6}{9}$

$126 = 126$

$\triangle RST$ is similar to $\triangle XYZ$ because the corresponding sides come equal to value in the equation $\frac{14}{21} = \frac{6}{9}$. Also, $m \angle S \equiv m \angle Y$. Side $ST \sim YZ$ in triangles $RST$ and $XYZ$. $XY \sim RS$ in those triangles as well.

**Score 2:** The student has a complete and correct response.
29 Triangles $\triangle RST$ and $\triangle XYZ$ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \cong \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.

Score 1: The student gave an incomplete justification. No relationship between the proportion and the included angle was stated.
Triangles $RST$ and $XYZ$ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \equiv \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.

No, $\triangle RST$ is not similar to $\triangle XYZ$ because its cross-products are not equal.

Score 1: The student gave an appropriate answer based on a computational error.
29 Triangles $RST$ and $XYZ$ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \cong \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.

Score 0: The student’s response was completely incorrect.
30 In the diagram below, \( \triangle ABC \) and \( \triangle XYZ \) are graphed.

Use the properties of rigid motions to explain why \( \triangle ABC \cong \triangle XYZ \).

\( \triangle XYZ \) is the image of \( \triangle ABC \) after a rotation of 180° about the origin which means \( \triangle ABC \) can be mapped onto \( \triangle XYZ \) and distance is preserved in any rotation. Rotations are also rigid motions and then the triangles are congruent.

**Score 2:** The student has a complete and correct response.
30 In the diagram below, \( \triangle ABC \) and \( \triangle XYZ \) are graphed.

Use the properties of rigid motions to explain why \( \triangle ABC \equiv \triangle XYZ \).

Because when rotating around the origin distance is preserved, therefore \( \triangle ABC \equiv \triangle XYZ \).

Score 2: The student has a complete and correct response.
30 In the diagram below, $\triangle ABC$ and $\triangle XYZ$ are graphed.

Use the properties of rigid motions to explain why $\triangle ABC \cong \triangle XYZ$.

$\triangle ABC \cong \triangle XYZ$ because it is a rotation and a rotation is a rigid motion.

**Score 1:** The student had an appropriate explanation but did not explain using the properties of rigid motions.
30 In the diagram below, $\triangle ABC$ and $\triangle XYZ$ are graphed.

Use the properties of rigid motions to explain why $\triangle ABC \cong \triangle XYZ$.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. $AC \cong ZX$</td>
<td>1. Both sides are 3 units</td>
</tr>
<tr>
<td>2. $CB \cong YZ$</td>
<td>2. Both sides are 4 units</td>
</tr>
<tr>
<td>3. $\angle Z \cong \angle C$</td>
<td>3. Right angles are congruent</td>
</tr>
<tr>
<td>4. $\triangle ABC \cong \triangle XYZ$</td>
<td>4. SAS congruence postulate.</td>
</tr>
</tbody>
</table>

**Score 0**: The student did not use the properties of rigid motions to explain the congruence.
31 The endpoints of $\overline{DEF}$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point $E$, if $DE:EF = 2:3$.

Score 2: The student has a complete and correct response.
31 The endpoints of $\overline{DEF}$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point $E$, if $DE:EF = 2:3$.

\[
\frac{DE}{DF} = \frac{2}{5}
\]

\[
\begin{align*}
16-1 & \quad 14-4 \\
15 & \quad 10 \\
\frac{2}{3} \cdot 15 & \quad \frac{2}{3} \cdot 10 \\
\frac{30}{5} & \quad \frac{20}{5} \\
6 & \quad 4 \\
1+6 & \quad 4+4 \\
(7, & \quad 8)
\end{align*}
\]

**Score 2:** The student has a complete and correct response.
31 The endpoints of \( \overline{DEF} \) are \( D(1,4) \) and \( F(16,14) \). Determine and state the coordinates of point \( E \), if \( DE:EF = 2:3 \).

Score 2: The student has a complete and correct response.
31 The endpoints of $\overline{DEF}$ are $D(1, 4)$ and $F(16, 14)$. Determine and state the coordinates of point $E$, if $DE:EF = 2:3$.

\[
k = \frac{3}{5} \quad p = \left(1 + \frac{3}{5}(15), 4 + \frac{3}{5}(10)\right) \quad m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{14 - 4}{16 - 1} = \frac{10}{15} \quad \rho = (1 + 9, 4 + 6) \quad \rho = (10, 10)
\]

\[E(10, 10)\]

**Score 1:** The student made an error in using $\frac{3}{5}$ instead of $\frac{2}{5}$. The answer is appropriate for the mistake made.
31 The endpoints of $DEF$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point $E$, if $DE:EF = 2:3$.

Score 0: The student expressed an incorrect response without appropriate justification.
Question 31

31 The endpoints of $\overline{DEF}$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point $E$, if $DE:EF = 2:3$.

Score 0: The student’s use of the midpoint formula was irrelevant to the question.
31 The endpoints of $DEF$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point $E$. 

If $DE:EF = 2:3$.

Score 0: The student gave an incomplete and incoherent response.
32 As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

\[ \tan 7^\circ = \frac{125}{x} \]
\[ x \tan 16^\circ = \frac{125}{\tan 16^\circ} \]
\[ x = \frac{125}{\tan 16^\circ} \]
\[ x = 435.9268055 \]
\[ x \approx 436 \]
\[ x = 1018.043303 \]

\[ \text{Distance } A \rightarrow D = 582 \text{ ft} \]

Score 4: The student has a complete and correct response.
As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was $7^\circ$. A short time later, at point $D$, the angle of elevation was $16^\circ$.

To the nearest foot, determine and state how far the ship traveled from point $A$ to point $D$.

\[
\tan 7^\circ = \frac{125}{x} \quad \tan 16^\circ = \frac{125}{x}
\]

\[
x = 1018, \quad x = 435.9
\]

\[
AD = 582 \text{ ft}
\]

**Score 4:** The student has a complete and correct response.
32 As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

\[
\tan 7° = \frac{x}{125} \quad \tan 16° = \frac{y}{125}
\]

\[
x = 435.3268055 \quad y = 1018.043303
\]

\[
y - x = 582.116498
\]

\[
y - x = 582
\]

Score 4: The student has a complete and correct response.
As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

Score 3: The student inappropriately rounded the values early when finding the hypotenuses. The student then correctly used the Pythagorean Theorem to get an appropriate answer.
As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

\[
\sin 7° = \frac{125}{AC} \quad \sin 16° = \frac{125}{DC}
\]

\[
AC = \frac{125}{\sin 7°} \quad DC = \frac{125}{\sin 16°}
\]

\[
AC = 1025.689 \quad DC = 453.494
\]

\[
AD = 1025.689 - 453.494 = 572.195 \approx 572
\]

**Score 2:** The student made one conceptual error using the wrong trigonometric function, but found an appropriate distance from point A to point D.
32 As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

\[
\tan 16^\circ = \frac{125}{x} \\
\tan 16^\circ \times = 125 \\
\tan x = 16(125) \\
\tan x = 2780 \\
\tan 7^\circ = \frac{125}{x} \\
\tan 7^\circ \times = 125 \\
\tan x = 7(125) \\
\tan x = 8060 \\
x = 5289 ft
\]

Score 1: The student had both trigonometric functions written correctly, but showed no further correct work.
32 As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

\[
\text{Score 1: } \text{The student had a correct trigonometric function for finding } AC, \text{ but used radians.}
\]
As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°.

To the nearest foot, determine and state how far the ship traveled from point A to point D.

\[
\sin 16° = \frac{x}{125} \\
\sin 7° = \frac{x}{129.6615758} \\
x = (\sin 16°) \times 125 \\
x = 34.4546699 \\
x = 15.8017711 \\
AD \approx 15.8 \text{ ft} \\
CD \approx 34.6 \text{ ft} \\
\]

Score 0: The student gave a completely incorrect response.
33 Triangle $ABC$ has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

Score 4: The student has a complete and correct response.
33 Triangle $ABC$ has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

\[
\text{Slope of } \overline{BC} = \frac{\Delta y}{\Delta x} \\
\overline{BC} = \frac{3}{2} \\
y = \frac{2}{3}x + b \\
x = 3
\]

**Score 4:** The student has a complete and correct response.
33 Triangle $ABC$ has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

Score 4: The student has a complete and correct response.
33 Triangle ABC has vertices with A(x,3), B(-3,-1), and C(-1,-4).

Determine and state a value of x that would make triangle ABC a right triangle. Justify why \( \triangle ABC \) is a right triangle.

[The use of the set of axes below is optional.]

\[
\text{slope } \overline{BA} = \frac{\Delta y}{\Delta x} = -7 \quad \text{T1!}
\]

\[
\text{slope of } \overline{BC} = \frac{-1-4}{-3-11} = \frac{3}{2}
\]

\[
\text{slope of } \overline{CA} = \frac{-1-3}{-3-3} = \frac{-4}{-6} = \frac{2}{3}
\]

\[x=2 \quad \text{because } \overline{BC} \text{ and } \overline{BA} \]

would have slopes that are negative reciprocals of each other, making them perpendicular, and perpendicular lines form right \( \angle \)s making it a right \( \triangle \)

Score 3:  The student made one graphing error when counting the slope of \( \overline{BA} \).
Triangle $ABC$ has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

**Score 2:** The student gave a correct response for the value of $x$. The work for slope was shown graphically but the justification for a right triangle was incomplete.
33 Triangle $ABC$ has vertices with $A(3), B(-3,-1), \text{and } C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

Score 1: The student gave a correct response with insufficient justification for a right triangle.
33 Triangle $ABC$ has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $	riangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

**Score 0:** The student gave a completely incorrect response.
33 Triangle $ABC$ has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$.

Determine and state a value of $x$ that would make triangle $ABC$ a right triangle. Justify why $\triangle ABC$ is a right triangle.

[The use of the set of axes below is optional.]

Score 0: The student gave an incorrect value of $x$ followed by an incorrect explanation that the point makes the triangle a right triangle using Pythagorean Theorem.
Let $\triangle D'E'F'$ be the image of $\triangle DEF$ after a translation along $\ell$, such that point $D$ is mapped onto point $A$. Determine and state the location of $F'$. Explain your answer.

Point $F'$ would be at point $C$ after translation because $AC \equiv DF$ and if $D'$ meets $A$ then $F'$ will touch $C$.

Let $\triangle D''E''F''$ be the image of $\triangle D'E'F'$ after a reflection across line $\ell$. Suppose that $E''$ is located at $B$. Is $\triangle DEF$ congruent to $\triangle ABC$? Explain your answer.

$\triangle DEF$ is congruent to $\triangle ABC$ because from the previous answer, $DF \equiv AC$ so if point $E''$ lays on point $B$ the triangles are congruent. This is proven by $\text{SSS} \equiv \text{SSS}$

**Score 4:** The student has a complete and correct response.
In the diagram below, $AC \cong DF$ and points $A$, $C$, $D$, and $F$ are collinear on line $\ell$.

Let $\triangle DEF$ be the image of $\triangle D'E'F'$ after a translation along $\ell$, such that point $D$ is mapped onto point $A$. Determine and state the location of $F'$. Explain your answer.

Point $F$ would be located on point $C$, because lines $AC$ and $DF$ are congruent, and therefore, if points $A$ and $D$ were the same point, and the sides were both congruent, $C$ and $F$ would be located at the same point.

Let $\triangle D'E''F''$ be the image of $\triangle D'E'F'$ after a reflection across line $\ell$. Suppose that $E''$ is located at $B$. Is $\triangle DEF$ congruent to $\triangle ABC$? Explain your answer.

Yes $\triangle DEF$ is congruent to $\triangle ABC$, because all of the points of $\triangle D'E''F''$ are located at the same point as $\triangle ABC$, making them congruent. $\triangle D'E''F''$ is also congruent to $\triangle DEF$ because, during the translation, it never underwent dilation. Therefore, through the transition property, $\triangle DEF \cong \triangle ABC$.

**Score 4:** The student has a complete and correct response.
Let \( \triangle D'E'F' \) be the image of \( \triangle DEF \) after a translation along \( \ell \), such that point \( D \) is mapped onto point \( A \). Determine and state the location of \( F' \). Explain your answer.

\( F' \) would be located at point \( C \) because if point \( D \) is on point \( A \), the triangle has to contain the same length which makes \( F' \) fall on point \( C \).

Let \( \triangle D''E''F'' \) be the image of \( \triangle D'E'F' \) after a reflection across line \( \ell \). Suppose that \( E'' \) is located at \( B \). Is \( \triangle DEF \) congruent to \( \triangle ABC \)? Explain your answer.

Yes they are still congruent triangles with the same length for each side.

**Score 3:** The student gave an incomplete explanation for the second part of the question.
Question 34

34 In the diagram below, \( \overline{AC} \cong \overline{DF} \) and points \( A, C, D, \) and \( F \) are collinear on line \( \ell \).

Let \( \triangle D'E'F' \) be the image of \( \triangle DEF \) after a translation along \( \ell \), such that point \( D \) is mapped onto point \( A \). Determine and state the location of \( F' \). Explain your answer.

\[ F \rightarrow F' \text{ would be at location C because } \overline{AC} \cong \overline{DF} \text{ they have congruent distances arepurt.} \]

Let \( \triangle D''E''F'' \) be the image of \( \triangle D'E'F' \) after a reflection across line \( \ell \). Suppose that \( E'' \) is located at \( B \). Is \( \triangle DEF \) congruent to \( \triangle ABC \)? Explain your answer.

\[ \text{Yes because } \overline{AC} \cong \overline{DF} \text{ and points are collinear on line } \ell. \text{ Also a reflection preserves the size of image to be the same.} \]

Score 3: The student gave an incomplete explanation for the first part of the question.
Question 34

34 In the diagram below, $AC \cong DF$ and points $A$, $C$, $D$, and $F$ are collinear on line $\ell$.

Let $\triangle DEF$ be the image of $\triangle D'E'F'$ after a translation along $\ell$, such that point $D$ is mapped onto point $A$. Determine and state the location of $F'$. Explain your answer.

Let $\triangle D'E''F''$ be the image of $\triangle D'E'F'$ after a reflection across line $\ell$. Suppose that $E''$ is located at $B$. Is $\triangle DEF$ congruent to $\triangle ABC$? Explain your answer.

Score 2: The student correctly answered Point $C$ and Yes, but both explanations were incomplete.
34 In the diagram below, $AC \cong DF$ and points $A$, $C$, $D$, and $F$ are collinear on line $\ell$.

Let $\triangle D'E'F'$ be the image of $\triangle DEF$ after a translation along $\ell$, such that point $D$ is mapped onto point $A$. Determine and state the location of $F'$. Explain your answer.

The location of $F'$ will be on point $C$ because after the translation the orientation of the triangle must stay the same.

Let $\triangle D''E''F''$ be the image of $\triangle D'E'F'$ after a reflection across line $\ell$. Suppose that $E''$ is located at $B$. Is $\triangle DEF$ congruent to $\triangle ABC$? Explain your answer.

$\triangle DEF$ is congruent to $\triangle ABC$ because they both share line $\ell$ and have a congruent side.

Score 1: The student correctly answered Point $C$, but showed no further correct work.
**Question 34**

34 In the diagram below, $AC \cong DF$ and points $A$, $C$, $D$, and $F$ are collinear on line $\ell$.

Let $\triangle DEF$ be the image of $\triangle D'E'F'$ after a translation along $\ell$, such that point $D$ is mapped onto point $A$. Determine and state the location of $F'$. Explain your answer.

Let $\triangle D''E''F''$ be the image of $\triangle D'E'F'$ after a reflection across line $\ell$. Suppose that $E''$ is located at $B$. Is $\triangle DEF$ congruent to $\triangle ABC$? Explain your answer.

**Score 1:** The student correctly answered Point $C$, but showed no further correct work.
34 In the diagram below, $AC \cong DF$ and points $A$, $C$, $D$, and $F$ are collinear on line $\ell$.

Let $\triangle DEF$ be the image of $\triangle ABC$ after a translation along $\ell$, such that point $D$ is mapped onto point $A$. Determine and state the location of $F'$. Explain your answer.

Let $\triangle D'E'F'$ be the image of $\triangle DEF$ after a reflection across line $\ell$. Suppose that $E'$ is located at $B$. Is $\triangle DEF$ congruent to $\triangle ABC$? Explain your answer.

Score 0: The student’s response was completely incorrect.
In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE = CF$.

Prove $ABCD$ is a rhombus.

Given $BE \perp CED$ and $DF \perp BFC$, the segments form right angles $\angle BEC$ and $\angle DFC$, which are congruent. $\angle ECD = \angle BCE$ by reflexive property. Given $CE = CF$,

this makes $\triangle BEC \cong \triangle DFC$ by ASA.

The corresponding segments $BC = CD$ are congruent by CPCTC. Given that $ABCD$ is a parallelogram, two congruent sides are $\parallel$, $ABCD$ must be a rhombus.

Score 6: The student has a complete and correct proof.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \cong CF$.

Prove $ABCD$ is a rhombus.

Score 6: The student has a complete and correct proof.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>$BE \perp CED$, $DF \perp BFC$, $CE \equiv CF$</td>
<td>1. given</td>
</tr>
<tr>
<td>$\angle DFC \equiv \angle BFD \equiv \angle FEC$, $\overline{BE} \parallel \overline{ED}$</td>
<td>2. perpendicular lines form congruent right angles</td>
</tr>
<tr>
<td>$\angle 1 \equiv \angle 2$</td>
<td>3. vertical angles are congruent</td>
</tr>
<tr>
<td>$LC = LC$</td>
<td>4. reflexive property</td>
</tr>
<tr>
<td>$\triangle BCE \equiv \triangle DCF$</td>
<td>5. ASA</td>
</tr>
<tr>
<td>$\overline{BC} \equiv \overline{CD}$</td>
<td>6. CPCTC</td>
</tr>
<tr>
<td>$\triangle ABCD$ is a rhombus</td>
<td>7. in a parallelogram, if two consecutive sides are congruent, said parallelogram is a rhombus</td>
</tr>
</tbody>
</table>

**Score 5:** The student had an incomplete given.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \cong CF$.

Prove $ABCD$ is a rhombus.

Score 5: The student gave one incorrect reason.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.

Score 4: The student proved congruent triangles, but showed no further correct work to prove $ABCD$ is a rhombus.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.

**Score 3:** The student proved $\angle BEC \equiv \angle DFC$ and $\angle C \equiv \angle C$, but showed no further work.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp \overline{CED}$, $DF \perp \overline{BFC}$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.

| 0 | $\angle BFC \equiv \angle BEC$ |  0 | Given |
| 1 | $3 \times 90^\circ$ |  2 | perpendicular lines create rt $\angle$s |
| 2 | $\angle BFC \equiv \angle BEC$ |  3 | $\angle$s are $\equiv$ |

Score 2: The student proved $\angle BEC \equiv \angle DFC$, but showed no further work.
Question 35

35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. $BE \perp CED$</td>
<td>Given</td>
</tr>
<tr>
<td>2. $DF \perp BFC$</td>
<td>$CE \equiv CF$</td>
</tr>
<tr>
<td>3. $CE \equiv CF$</td>
<td>Perpendicular lines form right angles</td>
</tr>
<tr>
<td>4. $LBED \cong LBE$</td>
<td>$LBED \cong LDBC$</td>
</tr>
<tr>
<td>5. $LBE \cong LBE$</td>
<td>$LDBC \cong LDBC$</td>
</tr>
<tr>
<td>6. $BC - FC \equiv CD - CE$</td>
<td>Right angles are congruent</td>
</tr>
<tr>
<td>7. $BF \equiv DE$</td>
<td>Subtraction postulate</td>
</tr>
<tr>
<td>8. $ABCD$ is a rhombus</td>
<td>Substitute postulate</td>
</tr>
</tbody>
</table>

Score 1: The student used perpendicularity to prove right angles, but did not prove $\angle BEC \equiv \angle DFC$. 
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE = CF$.

Prove $ABCD$ is a rhombus.

1. $CD \parallel BA$, $BC \parallel AD$
2. $\angle A + \angle D = 180^\circ$
3. $\angle B \cong \angle D$
4. $\angle A \cong \angle C$
5. $AD \cong BC$
6. $ABCD$ is a rhombus

**Score 0:** The student repeated the given but wrote no relevant statements.
35 In the diagram of parallelogram $ABCD$ below, $BE \perp CED$, $DF \perp BFC$, and $CE \equiv CF$.

Prove $ABCD$ is a rhombus.

Score 0: The student wrote no relevant statements.
Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

\[
V = \frac{1}{3} \pi (1.5)^2 \cdot 8
\]

\[
V_{100} = \frac{800}{3} \pi (2.25)
\]

\[
= 1885 \text{ in}^3
\]

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

\[
(1885 \text{ in}^3)(0.52)(\frac{0.10}{\text{in}^3})(\frac{\$}{0.10}) = \$99.02
\]

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter’s profit after selling 100 candles?

\[
\text{Revenue} = \$195
\]

\[
\text{Cost} = \$37.83 + \$98.02 = \$135.85
\]

\[
\text{Profit} = \$195 - 135.85 = \$59.15
\]

**Score 6:** The student has a complete and correct response.
36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

\[
\text{Volume of one cone: } V = \frac{1}{3} \pi r^2 h
\]
\[
V = \frac{1}{3} \pi (1.5)^2 (8)
\]
\[
V = \frac{1}{3} \pi (1.5)^2 (8) = 18.84955592
\]
\[
\text{Total volume for 100 cones: } 1884.96 \text{ in}^3
\]

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter's profit after selling 100 candles?

Score 5: The student did not give the total volume to the nearest cubic inch.
36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

\[
V = \frac{1}{3} \pi \times 1.5^2 \times 8 = 18.849
\]

\[18.849 \times 100 = 1884.9 \text{ in}^3\]

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

\[1884.9 \times 0.5202 = 979.6807 \times \$0.10 = \$97.97\]

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter’s profit after selling 100 candles?

\[\begin{align*}
97.97 & \\
+37.83 & \\
\hline
135.80 & \\
-135.79 & \\
\hline
0.01 & \text{ profit}
\end{align*}\]

Score 5: The student truncated instead of rounding early when finding the volume and the cost of the wax.
Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

\[ V = \frac{1}{3} \pi r^2 h \]
\[ V = \pi \left(\frac{3}{2}\right)^2 (8) = 56.548 \]

For 100 candles, \[ 5654.87 \]

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

\[ (0.52)(0.10)(5654.87) = $294.053 \]

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter's profit after selling 100 candles?

\[
\begin{array}{c}
195.00 \\
- 37.83 \\
\hline
157.17 \\
- 294.05 \\
\hline
-136.88 \\
Walter lost money
\end{array}
\]

Score 4: The student made an error in finding the volume as well as a rounding error.
36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter’s profit after selling 100 candles?

Score 3: The student made an error by finding the volume of a cylinder, and two rounding errors.
36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter’s profit after selling 100 candles?

Score 2: The student made a rounding error when finding the volume, did not find the cost of the wax, and made an error in finding the profit.
Question 36

36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

```
1/3 \pi \cdot 1.5^2 \cdot 8  \\
2.25 \cdot 8   \\
18.11  \\
\frac{5654.86726}{3} \times 100 =
```

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

```
1884.96 \times 0.52  \\
980.1792
```

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter’s profit after selling 100 candles?

Score 2: The student made a rounding error in finding the volume, and calculated the ounces of wax, but not the cost.
36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

\[
V = \frac{1}{3} \pi r^2 h \\
V = \frac{1}{3} \pi (1.5)^2 (8) \\
V = 18.849 \\
19
\]

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

\[
\frac{19}{.52} \times 10 = 365
\]

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter’s profit after selling 100 candles?

\[
365 - 1.95 - 37.83 = 325.22
\]

Score 1: The student found the volume of one candle, but no further correct work was shown.
36 Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?

\[
\text{Volume of cone} = \frac{1}{3} \pi r^2 h
\]

\[
\approx 75.36 \text{ in}^3
\]

Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

\[
\text{Weight of wax} = 100 \times 0.52 \text{ oz}
\]

If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter's profit after selling 100 candles?

\[
\text{Profit} = 100 \times 1.95 - 37.83 - 195.00
\]

\[
= 195.00 - 195.00 = 0
\]

Score 0: The student gave a completely incorrect response.
Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Because scale scores corresponding to raw scores in the conversion chart change from one administration to another, it is crucial that for each administration the conversion chart provided for that administration be used to determine the student’s final score. The chart above is usable only for this administration of the Regents Examination in Geometry (Common Core).