

Math 206 - Test 3
April 18, 2018

Name _____

Score _____

Show all work to receive full credit. Supply explanations where necessary.

1. (6 points) Survey participants were asked how much time they spend on morning hygiene and grooming. The numbers below are their responses, in minutes, listed in numerical order. Determine the quartiles, the interquartile range, and the boundary values for outliers. Then sketch the boxplot on the attached graph paper. (Do all work by hand, but you may check your work on your calculator.)

4, 6, 7, 9, 14, 15, 15, 16, 18, 18, 25, 26, 30, 32, 41, 45, 55, 63

2. (2 points) $\angle ABC$ and $\angle CBD$ are adjacent angles with measures $34^\circ 18' 49''$ and $40^\circ 50' 21''$, respectively. Find the measure of $\angle ABD$. Write your answer in degrees/minutes/seconds.

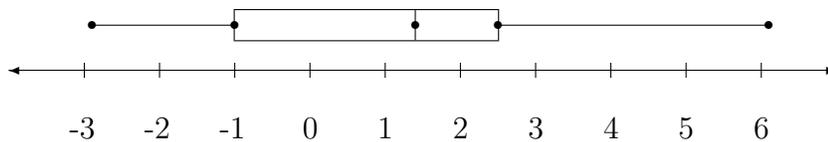
3. (3 points) Suppose the heights of trees in an orchard are normally distributed with mean 112 inches and standard deviation 14 inches.

(a) What percent of trees in the orchard have heights between 95 inches and 125 inches?

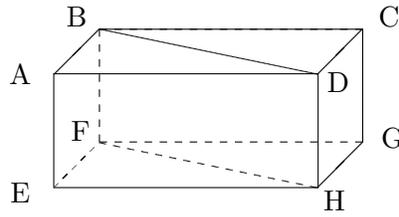
(b) What percent of trees in the orchard have heights greater than 140 inches?

4. (2 points) Use a straightedge to sketch an obtuse angle. Then use your protractor to find the measure of the angle.

5. (4 points) The boxplot shown below describes a certain collection of data. Find approximate values for the quartiles and the interquartile range. Based on your approximations, what would be the boundary values for outliers?

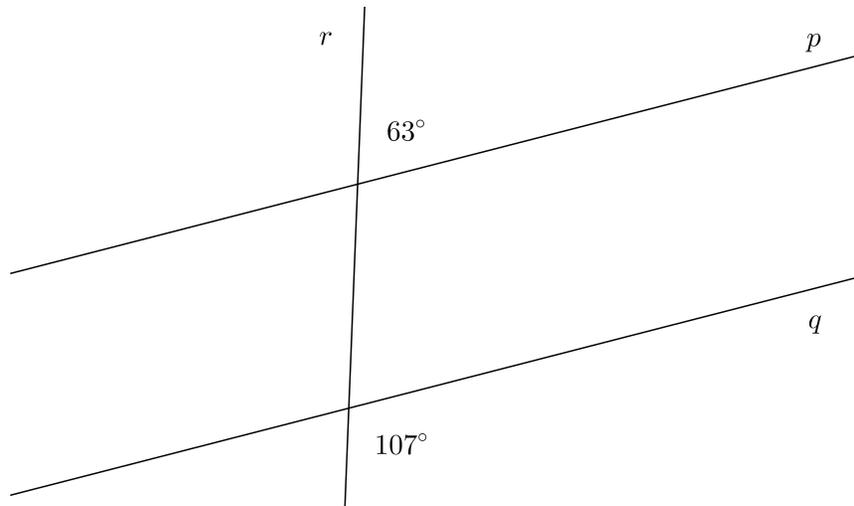


6. (4 points) Refer to the following three-dimensional figure. Be sure to use correct notation for your answers below.



- (a) Find a pair of skew lines or explain why it is not possible.
- (b) Find three concurrent lines or explain why it is not possible.
- (c) Find three points that are not coplanar or explain why it is not possible.
- (d) Find a dihedral angle.
7. (1 point) Suppose that a line is taken at random from each of two parallel planes. Must the lines be parallel? Explain your reasoning. (It might help to refer to the figure above.)

8. (2 points) Determine whether the lines p and q are parallel. Explain how you know.



9. (6 points) Sketch each of the following or explain why it is not possible.

(a) A concave quadrilateral

(b) A rhombus that is not a kite

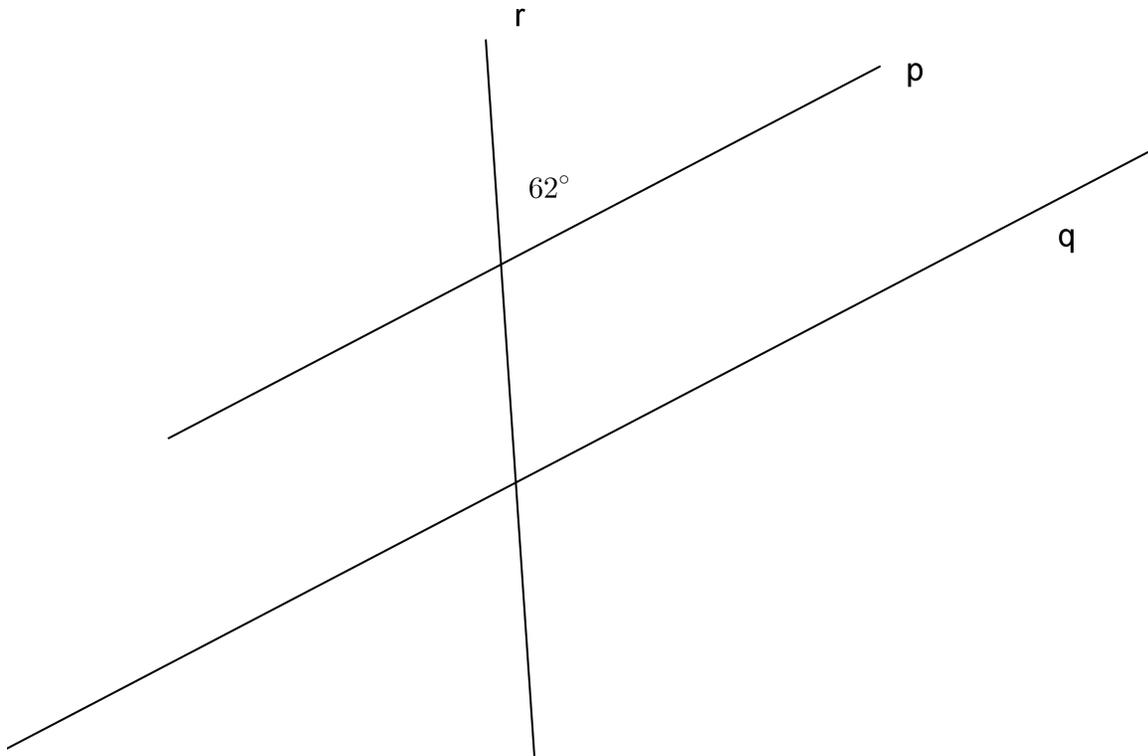
(c) A polygonal curve that is neither simple nor closed

(d) An obtuse, isosceles triangle

(e) A parallelogram with exactly one right angle

(f) An equilateral triangle that is not isosceles

10. (3 points) The parallel lines p and q are cut by transversal r . The measure of one of the angles is shown below. Find the measures of the seven (7) other angles and, for each one, briefly tell how you know.



11. (1 point) How many congruent sides does a scalene triangle have? _____

12. (1 point) What is the name of a polygon with 9 sides? _____

13. (5 points) Fill in a correct word.

- (a) A _____ is a subset of a line consisting of two endpoints and all points in between.
- (b) A angle whose measure is between 0° and 90° is called a _____ angle.
- (c) An angle is formed when two rays share a common endpoint. That common endpoint is called the _____.
- (d) Two angles that together make a right angle are called _____ angles.
- (e) An infinite set of points that forms a flat, two-dimensional surface is called a _____.

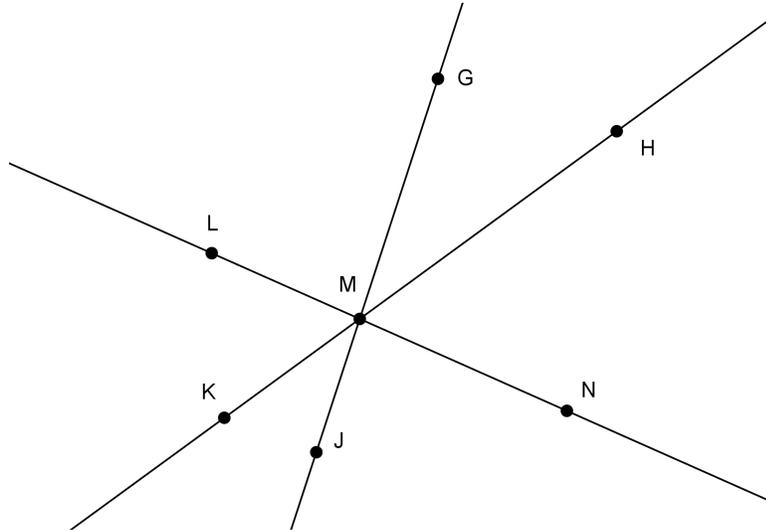
14. (2 points) Determine whether each statement is true or false.

- (a) _____ \overleftrightarrow{AB} is the same line as \overleftrightarrow{BA} .
- (b) _____ \overrightarrow{AB} is the same ray as \overrightarrow{BA} .
- (c) _____ Adjacent angles are congruent.
- (d) _____ Three noncollinear points determine a unique plane.

15. (2 points) Two lines are cut by a transversal. Which of these would prove that the lines are parallel? Circle all that apply.

- (a) A pair of vertical angles are congruent.
- (b) A pair of corresponding angles are congruent.
- (c) A pair of adjacent angles are congruent.
- (d) A pair of alternate interior angles are congruent.
- (e) A pair of alternate exterior angles are congruent.

16. (4 points) Refer to the figure below.



(a) Name a pair of adjacent angles.

(b) Name a pair of vertical angles.

(c) Name a pair of angles that are not adjacent.

(d) Name a pair of angles that are supplementary.

17. (2 points) Two angles are supplementary. One of the angles has degree measure x and the other has degree measure $4x + 50^\circ$. Find x .

