NORTH THURSTON PUBLIC SCHOOLS

END OF COURSE

GEOMETRY

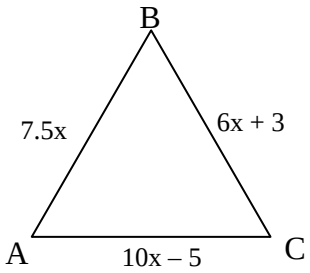
PRACTICE TEST

Name: _____

Date: _____

Day 1

1. Determine the value of x if ΔABC is equilateral.



Write your answer on the line.

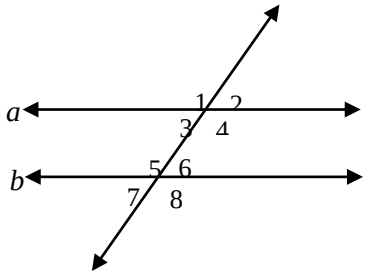
What is the value of x? _____

2. Write the converse of the conditional statement. Determine if the converse is true or false. If it is false, find a counterexample.

If you have a dog, then you are a pet owner.

0 A. If you are a pet owner, then you have a dog. True
0 B. A dog owner owns a pet. True
0 C. If you are a pet owner, then you have a dog. False, you could have a hamster.
0 D. If you have a dog, then you are a pet owner. False, you could have a hamster.

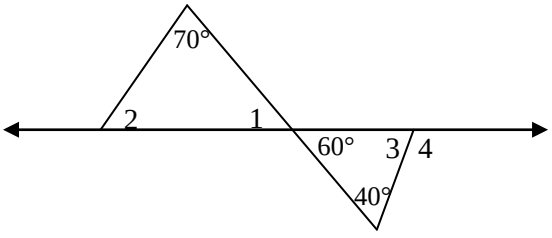
3. Given $a \parallel b$, determine which equation must be true.



0 A. $m\angle 1 + m\angle 5 = 180$
0 B. $m\angle 3 + m\angle 6 = 180$
0 C. $m\angle 2 + m\angle 7 = 180$
0 D. $m\angle 4 + m\angle 6 = 180$

Day 2

4. Determine measure of angle 2.



Write your answer on the line.

What is the measure of angle 2? _____degrees

5. ΔDEF has vertices $D(4, 1)$, $E(2, -1)$, and $F(-2, -1)$. Classify ΔDEF based on its sides.

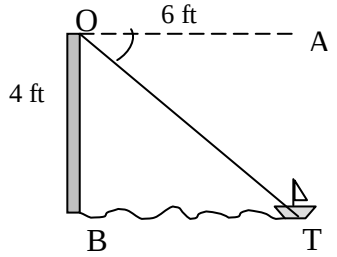
0 A. equilateral
0 B. isosceles
0 C. scalene
0 D. right

6. Determine the equation of a line through the point (3, –4) that is perpendicular to the line y = 3x + 7.

0 A. $y = 3x - 13$
0 B. $y = -3x + 5$
0 C. $y = -\frac{1}{3}x - 3$
0 D. $y = -\frac{1}{3}x - 5$

Day 3

7. Joe and Sara were standing on a pier sailing a toy sail boat. The boat was 6 feet from the base of the pier and the pier was 4 feet above the water.



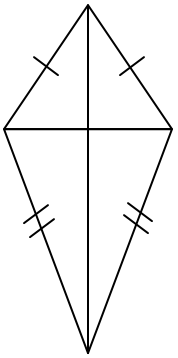
Determine the angle of depression from the pier to the toy sail boat.

Show your work using words, numbers and/or diagrams.

What is the angle of depression from the pier to the sail boat?_____degrees

8. Joanna's teacher said "The diagonals of a square bisect each other."

Joanna drew this figure and said "The diagonals of this figure bisect each other, so it must be a square."



Joanna made an error in her mathematical argument. What is the error?

0 A. There is no error. The figure Joanna drew is a square.
0 B. In the figure Joanna drew, the diagonals do not bisect each other.
0 C. Joanna used the converse of the teacher's statement and the converse is false.
0 D. Joanna's teachers statement is false. The diagonals of a square do not bisect each other.

9. Determine the midpoint of $\overline{JK}$, where $J(-1, 2)$ and $K(6, 8)$.

0 A. $(3\frac{1}{2}, 5)$

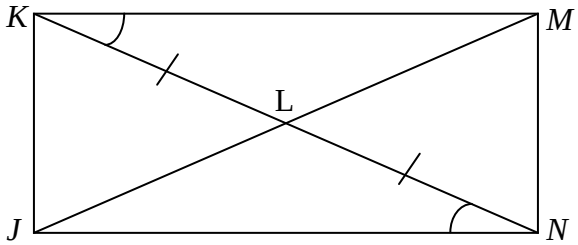
0 B. $(2\frac{1}{2}, 5)$

0 C. $(3\frac{1}{2}, 3)$

0 D. $(2\frac{1}{2}, 3)$

Day 4

10. Look at the diagram.



What theorem or postulate can you use to prove $\Delta KLM \cong \Delta NLJ$?

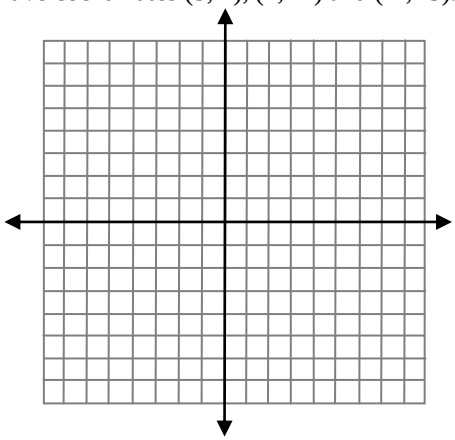
0 A. Corresponding Parts of Congruent Triangles are Congruent

0 B. Side-Angle-Side Congruence

0 C. Angle-Side-Angle Congruence

0 D. Side-Side-Side Congruence

11. Three vertices of a square have coordinates (3, 1), (4, -4) and (-1, -5). The diagonals of the square intersect at point *Q*.



Determine the coordinates of point *Q*.

You may use the blank grid to help determine the solution.

Write your answer on the line.

What are the coordinates of point *Q*? (_____ , _____)

12. 3, 5, 7, and 11 are prime numbers. 4, 6, 8, 9, and 10 are composite numbers. Tiana makes the conjecture that prime numbers must be odd.
Which statement is true?

0 A. This is an example of inductive reasoning and the conjecture is valid.

0 B. This is an example of inductive reasoning and the conjecture is not valid.

0 C. This is an example of deductive reasoning and the conjecture is valid.

0 D. This is an example of deductive reasoning and the conjecture is not valid.

Day 5

13. One leg of a $45° - 45° - 90°$ triangle is 8 cm long.

Determine the length of the hypotenuse.

0 A. $8\sqrt{3}$

0 B. $8\sqrt{2}$

0 C. $4\sqrt{2}$

0 D. 16

14. Look at the conditional statement.

"If an angle measures 30°, then it is acute"

Which statement is the converse?

0 A. If an angle does not measure 30°, then it is not acute.

0 B. If an angle is not acute, then it does not measure 30°.

0 C. If an angle is acute, then it measures 30°.

0 D. If an angle measures 30°, then it is not acute.

15. Which equation represents the line through the points (-1, -2) and (2, 7)?

0 A. $y = 3x + 1$

0 B. $y - 2 = 3(x - 1)$

0 C. $y - 7 = -3(x - 2)$

0 D. $x - 3y = 5$

Day 6

16. Which statement is true about <u>all</u> parallelograms?

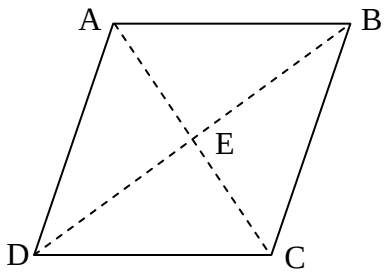
0 A. The diagonals bisect pairs of opposite angles.

0 B. The diagonals are congruent.

0 C. The diagonals bisect each other.

0 D. The diagonals are perpendicular

17. Quadrilateral *ABCD* is a rhombus and m$\angle BCE = 50°$.



Determine the m$\angle EBC$.

Write your answer on the line.

What is the m$\angle EBC$? _____ °

18. Look at the conditional statement.

"If a figure is a pentagon, then it has five sides"

Which statement is the inverse?

0 A. If a figure has five sides, then it is a pentagon.

0 B. If a figure is a pentagon, then it does not have five sides.

0 C. If a figure does not have five sides, then it is not a pentagon.

0 D. If a figure is not a pentagon, then it does not have five sides.

Day 7

19. Triangle *JKE* is an obtuse isosceles triangle with $m\angle E = 10°$ and $\overline{KE} > \overline{JK}$.

What is the $m\angle J$?

0 A. 170°

0 B. 160°

0 C. 85°

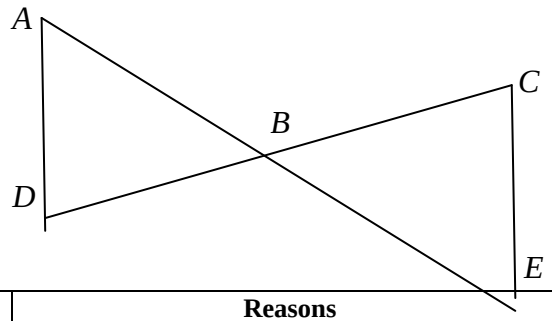
0 D. 10°

20. A proof is shown.

Fill in the blanks for steps 5 and 6 to complete the proof.

Given: B is the midpoint of $\overline{AE}$.
B is the midpoint of $\overline{CD}$.

Prove: $\Delta ABD \cong \Delta EBC$.



Statements	Reasons
1. B is the midpoint of $\overline{AE}$.	1. Given
2. $\overline{AB} \cong \overline{BE}$	2. Definition of midpoint
3. B is the midpoint of $\overline{CD}$.	3. Given
4. $\overline{CB} \cong \overline{BD}$	4. Definition of midpoint
5.	5. Vertical Angles Theorem
6. $\Delta ABD \cong \Delta EBC$	6.

21. Which ordered pair is the midpoint of the line segment with endpoints (2,-5) and (-6, 4)?

0 A. (-4, -1)

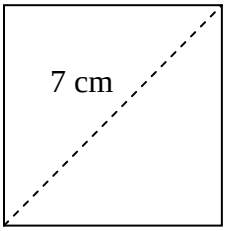
0 B. $(-4, -\frac{1}{2})$

0 C. $(-2, -\frac{1}{2})$

0 D. (-2, -1)

Day 8

22. The diagonal of a square is 7 cm.



Determine the length of one side of the square.

0 A. $3\frac{1}{2}$

0 B. $7\sqrt{2}$

0 C. $\frac{7\sqrt{3}}{3}$

0 D. $\frac{7\sqrt{2}}{2}$

23. Which statement is true?

0 A. A postulate is accepted as true without proof.

0 B. A theorem is accepted as true without proof.

0 C. Definitions can never be used as reasons in a proof.

0 D. Theorems can never be used as reasons in a proof.

24. Two unique planes intersect. Which geometric term describes the intersection?

0 A. line

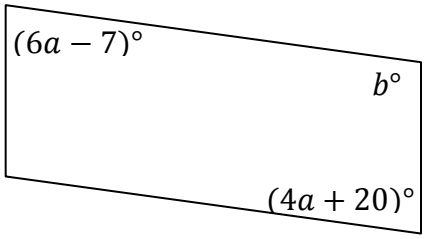
0 B. plane

0 C. point

0 D. segment

Day 9

25. Look at the diagram.



Determine the values for *a* and *b* that would make the quadrilateral a parallelogram.

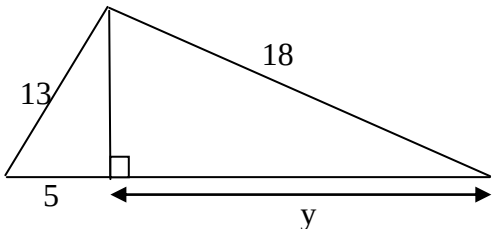
0 A. a = 13.5, b = 166.5

0 B. a = 16.7, b = 93.2

0 C. a = 13.5, b = 106

0 D. a = 16.7, b = 86.8

26. Look at the triangle.



Determine the length of *y*. Express your answer in simplified radical form.

Write your answer on the line.

What is the length of *y*? _____

27. Lines ***l***, ***m***, and ***n*** lie in the same plane. Line ***m*** is perpendicular to line ***l***. Line ***n*** is perpendicular to line ***l***. Which statement is true?

0 A. Line ***m*** and line ***n*** are perpendicular.

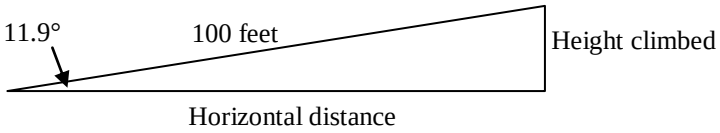
0 B. Line ***m*** and line ***n*** are parallel.

0 C. Line ***m*** and line ***n*** will intersect.

0 D. Line ***m*** and line ***n*** are skew

Day 10

28. While walking around Seattle, Mary climbed several steep streets. One of the steepest streets, Roy Street has a slope angle of 11.9° according to the tour guide. After walking 100 feet up the hill, she wanted to determine how high she had climbed.



Use a trigonometric ratio (sine, cosine, tangent) to determine how high Mary climbed.

Be sure to write the equation and show the steps you used to solve the equation. Round your answer to the nearest foot.

How high did Mary climb?_____

29. Determine how many miles a person will run during a 5-kilometer race. Write your answer on the line.

$1 \text{ km} \approx 0.62 \text{ mi}$

How many miles will a person run during a 5-kilometer race?_____

30. Which statement is an example of inductive reasoning?

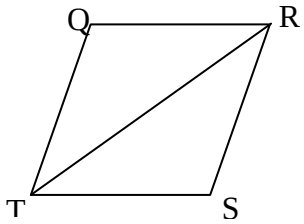
0 A. M is a midpoint of AB. Therefore AM = MB.
0 B. Squares have equal sides. This figure has equal sides, therefore this figure is a square.
0 C. The base angles of an isosceles triangle are equal. The base angles of this triangle are equal. Therefore, this triangle is isosceles.
0 D. Triangular numbers have a pattern. 1, 3, 6, 10, and 15 are triangular numbers. Therefore, the next triangular number is 21.

Day 11

31. The rhombus *QRST* is made of two congruent triangles. Given m $\angle QRS = 34°$ determine the measure of $\angle S$.

What is the measure of $\angle S$?

0 A. 56°
0 B. 73°
0 C. 112°
0 D. 146°

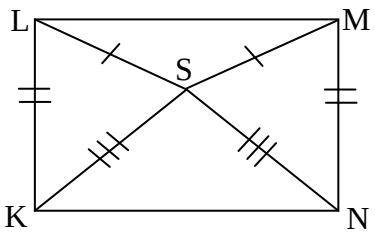


32. Determine whether the conjecture is true or false. Give a counterexample for a false conjecture.

Given: points *A*, *B*, *C*, and *D*
Conjecture: *A*, *B*, *C*, and *D* are coplanar

True or false?_____

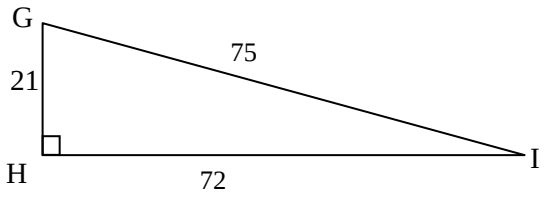
33. Identify the congruent triangles in the diagram and write a congruence statement.



0 A. Δ LSM $\cong$ Δ KSN
0 B. Δ LSK $\cong$ Δ MSN
0 C. Δ LKS $\cong$ Δ MSN
0 D. Δ LSK $\cong$ Δ NSM

Day 12

34. Determine cos *I* in ΔGHI.



0 A. $\frac{21}{72}$

0 B. $\frac{21}{75}$

0 C. $\frac{75}{72}$

0 D. $\frac{72}{75}$

35. Write the contrapositive of the conditional statement. Determine if the contrapositive is true or false. If it is false, find a counterexample.

"Two angles measuring 180 degrees are supplementary"

0 A. Two angles not measuring 180 degrees are supplementary. True
0 B. More than two angles measuring 180 degrees are non-supplementary. True
0 C. Non-supplementary angles and not two angles measuring 180 degrees. True
0 D. Non-supplementary angles are two angles measuring 180 degrees. False; supplementary angles must measure 180 degree.

36. Complete this chart.

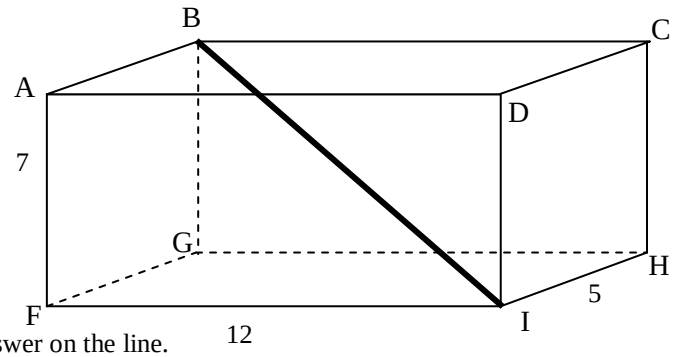
Figure	# of edges *e*	# of faces *f*	# of vertices *v*	 *f* + *v*
Triangular Pyramid	6	4	4	8
Triangular Prism				
Square Pyramid				
Cube				
Hexagonal Pyramid				
Hexagonal Prism				

Day 13

37. Determine which statement is a property of all rectangles.

0 A. Four congruent sides.
0 B. Diagonals bisect the angles.
0 C. Diagonals are perpendicular.
0 D. Four right angles.

38. The figure is a rectangular prism with dimensions 12 inches long, 5 inches wide and 7 inches tall. Determine the length of $\overline{BI}$.



Write your answer on the line.

What is the length of $\overline{BI}$?_____

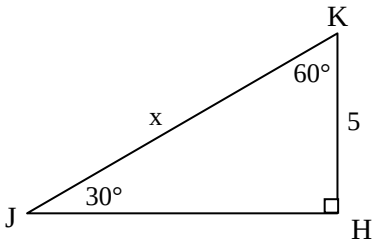
39. Given *B*(–4, –6), determine which reflection would result in *B*'(6, 4).

0 A. Reflected over the x-axis.
0 B. Reflected over the y-axis.
0 C. Reflected over the line y = –x.
0 D. Reflected over the line y = x.

Day 14

40. Determine the exact length of x in Δ*HJK*.

0 A. $5\sqrt{2}$
0 B. $5\sqrt{3}$
0 C. 10
0 D. 15



41. If you are going 50 miles per hour, determine how many feet per second you are traveling.

Write your answer on the line.

How many feet per second are you traveling?_____

42. The ratio of a pair of corresponding sides in two similar triangles is 5:3. The area of the smaller triangle is 108 in^2. What is the area of the larger triangle?

0 A. 300 in^2

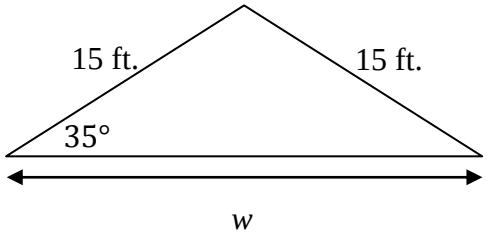
0 B. 180 in^2

0 C. 64.8 in^2

0 D. 38.9 in^2

Day 15

43. Jessie is working on the roof of her house. She has measured the angle of the roof and the length of the roof. Determine the width of the house, *w*.



0 A. 18.31 ft.

0 B. 24.57 ft.

0 C. 12.29 ft.

0 D. 26.15 ft.

44. The segment bisector is the midpoint.

Write the inverse.

_____

_____

_____

Determine if the statement is true or false. _____

If it is false, write a counterexample.

_____

_____

_____

45. ΔRST has vertices $R(3, 3)$, $S(6, -2)$, and $T(0, -2)$. Classify ΔRST based on its sides.

0 A. isosceles

0 B. scalene

0 C. equilateral

0 D. right

Day 16

46. Look at the given information for quadrilateral *ABCD*.

$\overline{AB} || \overline{CD}$
$\overline{AD} \cong \overline{BC}$
$\overline{AD}$ is not parallel to $\overline{BC}$

- Draw and label a shape that satisfies all of the given information.
- Determine the most specific name for the shape.

What is the most specific name for quadrilateral *ABCD*? _____

47. Martina has a calculator box that has a volume of 29 cubic inches.

1 inch = 2.54 centimeters

Determine the volume of the calculator box to the nearest cubic centimeter.

Write your answer on the line.

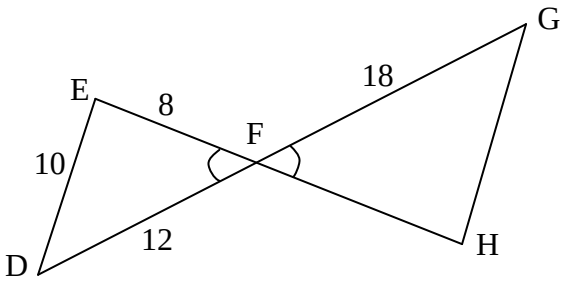
What is the volume of the calculator box to the nearest cubic centimeter? _____

48. Determine the image of $Y(-4, 7)$ under the translation of $(x, y) \rightarrow (x + 3, y - 5)$.

0 A. $Y'(-1, 2)$
0 B. $Y'(-1, 12)$
0 C. $Y'(-7, 2)$
0 D. $Y'(-7, 12)$

Day 17

49. Look at the figure.



What additional information do you need to show the triangles below are similar using the Side-Angle-Side Similarity Theorem?

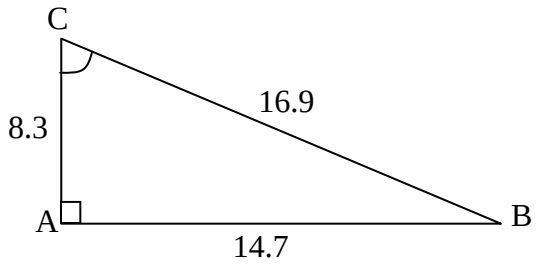
0 A. FH = 12

0 B. ∠E ≅ ∠H

0 C. GH = 15

0 D. ∠D ≅ ∠G

50. Find sin C as a decimal rounded to the nearest hundredth.



0 A. 0.49

0 B. 60.44°

0 C. 0.87°

0 D. 0.87

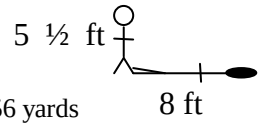
51. Two similar figures have a ratio of volumes of 64:27. What is the ratio of similarity?

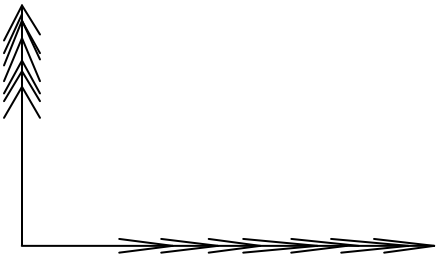
Write your answer on the line.

What is the ratio of similarity? _____

Day 18

52. Michael is $5\frac{1}{2}$ feet tall. Michael measures his shadow as 8 feet long. A tree in his backyard has a shadow that is 25 yards long. How tall is the tree?





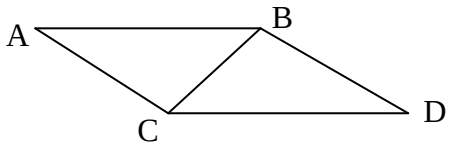
0 A. 51.56 yards

0 B. 17.19 feet

0 C. 51.56 feet

0 D. 36.36 yards

53. Look at the pair of triangles.



Which statement is true?

0 A. The triangles are congruent.

0 B. The triangles are similar but not congruent.

0 C. The triangles are not similar or congruent.

0 D. There is not enough information to determine similarity or congruence.

54. Steven built a box for his vegetable garden in the shape of a rectangular prism. The volume of the vegetable garden was 24 cubic feet. He built another garden box that was two times longer and two times higher. He thinks the volume will be twice as much.

Explain why Steven is not correct.

54 continued on next page

54 cont.

If Steven wants his second garden box to have twice the volume, what should he do instead?

Day 19

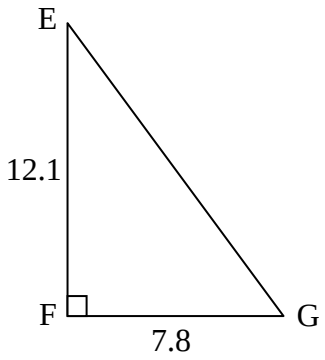
55. To the nearest degree, what is m∠G?

0 A. 2°

0 B. 57°

0 C. 50°

0 D. 33°

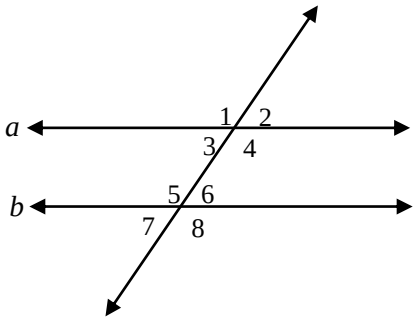


56. *JKLM* is an isosceles trapezoid with *J*(0, –1), *K*(–2, 3) and *M*(6, –1). Determine the coordinates of *L*.

0 A. *L* (6, 1)
0 B. *L* (9, 4)
0 C. *L* (2, 3)
0 D. *L* (8, -3)

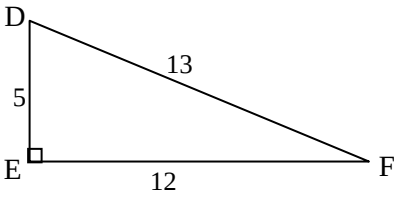
57. Given $a \parallel b$, determine which relationship must be true.

0 A. ∠1 and ∠3 are congruent.
0 B. ∠2 and ∠8 are supplementary.
0 C. ∠4 and ∠5 are similar.
0 D. ∠3 and ∠7 are complementary.

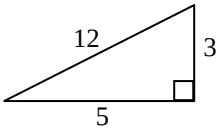


Day 20

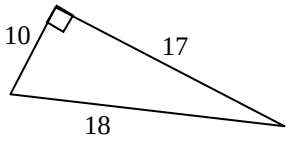
58. Determine which triangle is similar to ΔDEF.



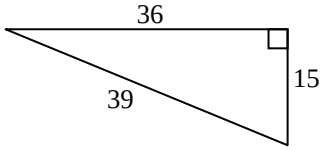
0 A.



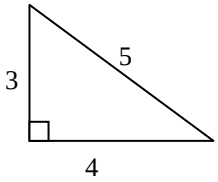
0 B.



0 C.



0 D.



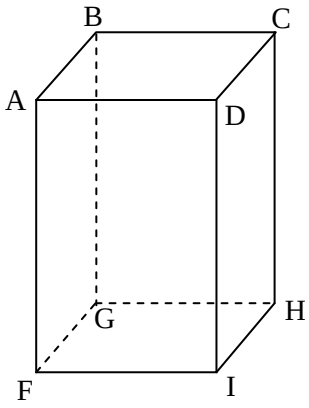
59. Name all segments skew to $\overline{BC}$.

0 A. $\overline{FI}, \overline{AD}, \overline{FA}, \overline{DI}$

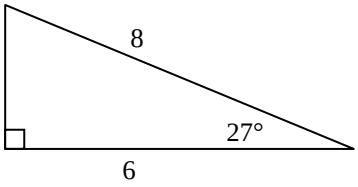
0 B. $\overline{FG}, \overline{GH}, \overline{HI}, \overline{FI}$

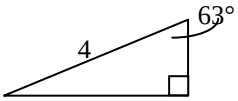
0 C. $\overline{CD}, \overline{AB}, \overline{BG}, \overline{CH}$

0 D. $\overline{GF}, \overline{HI}, \overline{DI}, \overline{AF}$



60. Determine which theorem or postulate can be used to prove that these two triangles are similar.

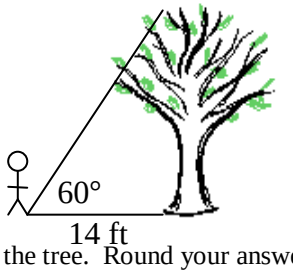




0 A. AA
0 B. SAS
0 C. SSA
0 D. SSS

Day 21

61. Cody is standing 14 feet from the base of the tree. The top of the tree makes a 60° angle with the ground at the point where he is standing.



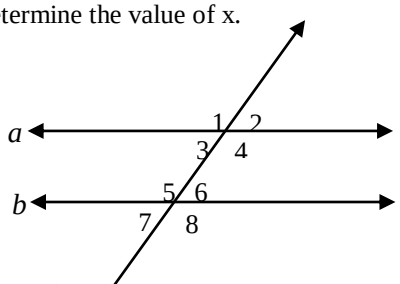
Determine the height of the tree. Round your answer to two decimal places.

Write your answer on the line.

What is the height of the tree? _____ feet

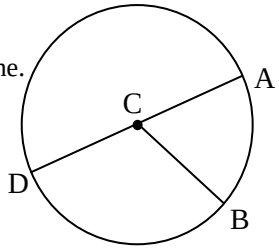
62. Given $a \parallel b$ and m$\angle 3 = 5x + 10$ and m$\angle 5 = 3x + 10$, determine the value of x.

0 A. 110
0 B. 70
0 C. 20
0 D. 2.5



63. In circle C, $m\overset{\frown}{AB} = 72$ and $\overline{AD}$ is a diameter . Determine m$\angle BCD$.

Write your answer on the line.



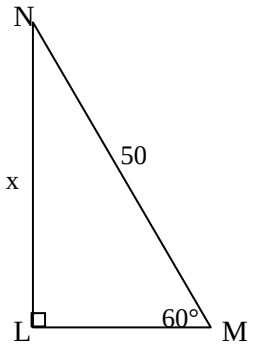
What is the m$\angle BCD$?_____degrees

Day 22

64. Determine which set of measures could represent the sides of a right triangle.

0 A. 2, 3, 4
0 B. 7, 11, 14
0 C. 8, 10, 12
0 D. 9, 12, 15

65. Determine the exact value of x in ΔLMN.



0 A. 25
0 B. $25\sqrt{2}$
0 C. $25\sqrt{3}$
0 D. 100

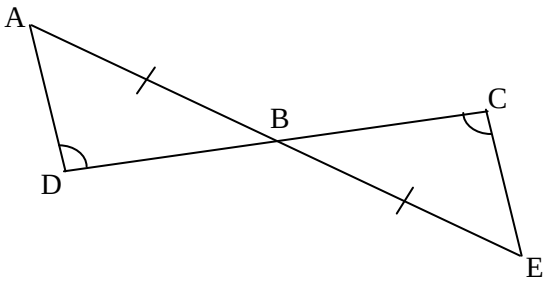
66. ΔRST has vertices $R(-2\ 5)$, $S(1, 1)$, and $T(-6, 2)$. Classify ΔRST based on its sides.

0 A. isosceles
0 B. scalene
0 C. right isosceles
0 D. right

Day 23

67. In the diagram:

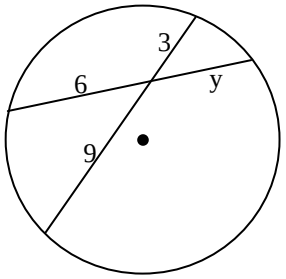
Given: $\overline{AB} \cong \overline{EB}$
$\angle D \cong \angle C$
Prove: $\Delta ABD \cong \Delta EBC$



Proof:

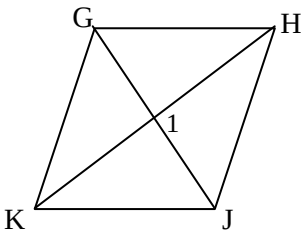
68. Determine the value of y.

0 A. 18
0 B. 12
0 C. 6
0 D. 4.5



69. For rhombus *GHJK*, determine m $\angle$ 1.

0 A. 45°
0 B. 60°
0 C. 90°
0 D. 120°



Day 24

70. Given quadrilateral *XYWZ*, determine whether $\overleftrightarrow{WX}$ and $\overleftrightarrow{YZ}$ are parallel, perpendicular or neither.

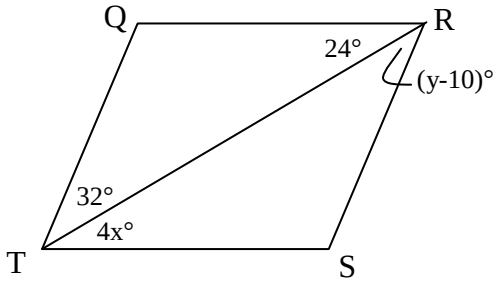
W(0, –3), *X*(–1, 5), *Y*(2, 5) *Z*(–1, 2)

Show your work using words, numbers and/or diagrams.

Are $\overleftrightarrow{WX}$ and $\overleftrightarrow{YZ}$ parallel, perpendicular or neither?_____

71. Determine the value of x and y so that QRST will be a parallelogram.

0 A. x = 6, y = 42
0 B. x = 6, y = 22
0 C. x = 20, y = 42
0 D. x = 20, y = 22



72. Two angles measuring 90° are complementary.

Write the inverse.

_____

_____

_____

Determine if the statement is true or false. _____

If it is false, write a counterexample.

_____

_____

_____

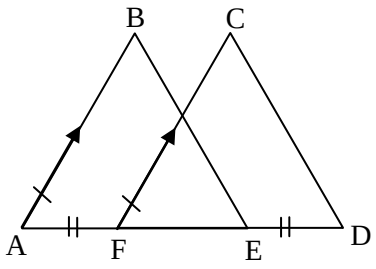
Day 25

73. Which statement is an example of deductive reasoning?

0 A. This bird is white. Swans are white. Therefore, this bird is a swan.
0 B. Dogs are mammals. Mammals breathe oxygen. Therefore dogs breathe oxygen.
0 C. This rock is not heavy. Lava rocks are not heavy. Therefore this rock is lava rock.
0 D. When the sidewalks get icy, they get slippery. The sidewalks are slippery. Therefore the sidewalks are icy.

74. If $\overline{AF} \cong \overline{DE}, \overline{AB} \cong \overline{FC}$ and $\overline{AB} \parallel \overline{FC}$, determine which theorem or postulate can be used to prove $\Delta ABE \cong \Delta FCD$.

0 A. AAS
0 B. ASA
0 C. SAS
0 D. SSS



75. Identify which of the following is a property of a parallelogram.

0 A. The diagonals are congruent.
0 B. The diagonals bisect the angles.
0 C. The diagonals are perpendicular.
0 D. The diagonals bisect each other.