JEFFERSON MATH PROJECT
REGENTS BY TOPIC

NY Geometry Regents Exam Questions
from Fall 2008 to January 2010 Sorted by Topic

(Answer Key)

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Dear Sir

I have to acknolege the reciept of your favor of May 14. in which you mention that you have finished the 6. first books of Euclid, plane trigonometry, surveying & algebra and ask whether I think a further pursuit of that branch of science would be useful to you. there are some propositions in the latter books of Euclid, & some of Archimedes, which are useful, & I have no doubt you have been made acquainted with them. trigonometry, so far as this, is most valuable to every man, there is scarcely a day in which he will not resort to it for some of the purposes of common life. the science of calculation also is indispensible as far as the extraction of the square & cube roots; Algebra as far as the quadratic equation & the use of logarithms are often of value in ordinary cases: but all beyond these is but a luxury; a delicious luxury indeed; but not to be indulged in by one who is to have a profession to follow for his subsistence. in this light I view the conic sections, curves of the higher orders, perhaps even spherical trigonometry, Algebraical operations beyond the 2d dimension, and fluxions.

Letter from Thomas Jefferson to William G. Munford, Monticello, June 18, 1799.

Geometry Regents Exam Questions by Performance Indicator: Topic
Answer Section

1 ANS: 4

The slope of $y = -\frac{2}{3}x - 5$ is $-\frac{2}{3}$. Perpendicular lines have slope that are opposite reciprocals.

PTS: 2 REF: 080917ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

2 ANS: 2

The slope of a line in standard form is $-\frac{A}{B}$ so the slope of this line is $-\frac{5}{3}$ Perpendicular lines have slope that are the opposite and reciprocal of each other.

PTS: 2 REF: fall0828ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

3 ANS: 3

$m = \frac{-A}{B} = -\frac{3}{4}$

PTS: 2 REF: 011025ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

4 ANS: 3

The slope of $y = x + 2$ is 1. The slope of $y - x = -1$ is $\frac{-A}{B} = \frac{-(-1)}{1} = 1$.

PTS: 2 REF: 080909ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

5 ANS: 3

$m = \frac{-A}{B} = \frac{5}{2}$. $m = \frac{-A}{B} = \frac{10}{4} = \frac{5}{2}$

PTS: 2 REF: 011014ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

6 ANS: 2

The slope of $2x + 3y = 12$ is $-\frac{A}{B} = -\frac{2}{3}$. The slope of a perpendicular line is $\frac{3}{2}$. Rewritten in slope intercept form, (2) becomes $y = \frac{3}{2}x + 3$.

PTS: 2 REF: 060926ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

7 ANS: 4

$3y + 1 = 6x + 4$. $2y + 1 = x - 9$

$3y = 6x + 3$ $\quad 2y = x - 10$

$y = 2x + 1$ $\quad y = \frac{1}{2}x - 5$

PTS: 2 REF: fall0822ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

8 ANS: 2

The slope of $y = \frac{1}{2}x + 5$ is $\frac{1}{2}$. The slope of a perpendicular line is -2. $y = mx + b$.

$$5 = (-2)(-2) + b$$

$$b = 1$$

PTS: 2 REF: 060907ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

9 ANS: 4

The slope of $y = -3x + 2$ is -3. The perpendicular slope is $\frac{1}{3}$. $-1 = \frac{1}{3}(3) + b$

$$-1 = 1 + b$$

$$b = -2$$

PTS: 2 REF: 011018ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

10 ANS: 2

The slope of a line in standard form is $-\frac{A}{B}$, so the slope of this line is 2. A parallel line would also have a slope of 2. Since the answers are in slope intercept form, find the y-intercept: $y = mx + b$

$$-11 = 2(-3) + b$$

$$-5 = b$$

PTS: 2 REF: fall0812ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

11 ANS:

$y = -2x + 14$. The slope of $2x + y = 3$ is $\frac{-A}{B} = \frac{-2}{1} = -2$. $y = mx + b$.

$$4 = (-2)(5) + b$$

$$b = 14$$

PTS: 2 REF: 060931ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

12 ANS:

$y = \frac{2}{3}x - 9$. The slope of $2x - 3y = 11$ is $-\frac{A}{B} = \frac{-2}{-3} = \frac{2}{3}$. $-5 = \left(\frac{2}{3}\right)(6) + b$

$$-5 = 4 + b$$

$$b = -9$$

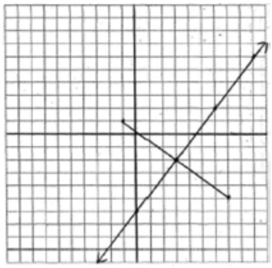
PTS: 2 REF: 080931ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

13 ANS:

$y = \frac{4}{3}x - 6$. $M_x = \frac{-1+7}{2} = 3$ The perpendicular bisector goes through $(3,-2)$ and has a slope of $\frac{4}{3}$.

$M_y = \frac{1+(-5)}{2} = -2$

$m = \frac{1-(-5)}{-1-7} = -\frac{3}{4}$

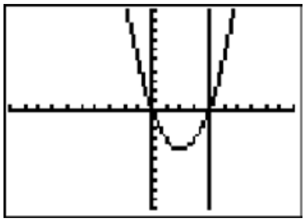


$y - y_M = m(x - x_M)$.

$y - 1 = \frac{4}{3}(x - 2)$

PTS: 4 REF: 080935ge STA: G.G.68 TOP: Perpendicular Bisector

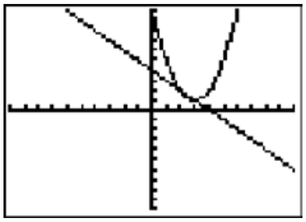
14 ANS: 1



$y = x^2 - 4x = (4)^2 - 4(4) = 0$. $(4,0)$ is the only intersection.

PTS: 2 REF: 060923ge STA: G.G.70 TOP: Quadratic-Linear Systems

15 ANS: 4



$y + x = 4$. $x^2 - 6x + 10 = -x + 4$. $y + x = 4$. $y + 2 = 4$

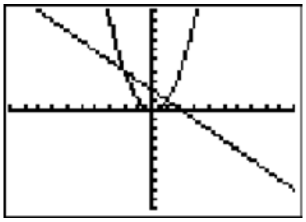
$y = -x + 4$ $x^2 - 5x + 6 = 0$ $y + 3 = 4$ $y = 2$

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

$x = 3 \text{ or } 2$

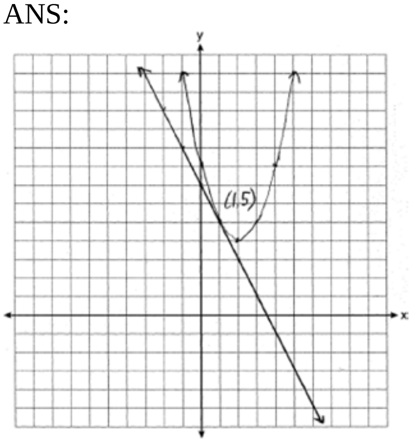
PTS: 2 REF: 080912ge STA: G.G.70 TOP: Quadratic-Linear Systems

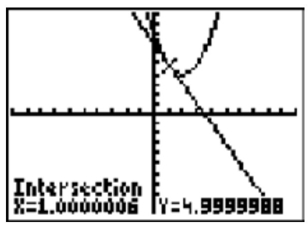
16 ANS: 3



PTS: 2 REF: fall0805ge STA: G.G.70 TOP: Quadratic-Linear Systems

17 ANS:





PTS: 6 REF: 011038ge STA: G.G.70 TOP: Quadratic-Linear Systems

18 ANS: 2

$M_x = \frac{-2+6}{2} = 2.\ \ M_y = \frac{-4+2}{2} = -1$

PTS: 2 REF: 080910ge STA: G.G.66 TOP: Midpoint

19 ANS: 2

$M_x = \frac{2+(-4)}{2} = -1.\ \ M_Y = \frac{-3+6}{2} = \frac{3}{2}.$

PTS: 2 REF: fall0813ge STA: G.G.66 TOP: Midpoint

20 ANS:

$(6,-4).\ \ C_x = \frac{Q_x + R_x}{2}.\ \ C_y = \frac{Q_y + R_y}{2}.$

$$3.5 = \frac{1+R_x}{2} \qquad 2 = \frac{8+R_y}{2}$$

$$7 = 1 + R_x \qquad 4 = 8 + R_y$$

$$6 = R_x \qquad -4 = R_y$$

PTS: 2 REF: 011031ge STA: G.G.66 TOP: Midpoint

21 ANS: 4

$M_x = \frac{-6+1}{2} = -\frac{5}{2}$. $M_y = \frac{1+8}{2} = \frac{9}{2}$.

PTS: 2 REF: 060919ge STA: G.G.66 TOP: Midpoint

22 ANS: 4

$d = \sqrt{(-3-1)^2 + (2-0)^2} = \sqrt{16+4} = \sqrt{20} = \sqrt{4} \cdot \sqrt{5} = 2\sqrt{5}$

PTS: 2 REF: 011017ge STA: G.G.67 TOP: Distance

23 ANS: 1

$d = \sqrt{(-4-2)^2 + (5-(-5))^2} = \sqrt{36+100} = \sqrt{136} = \sqrt{4} \cdot \sqrt{34} = 2\sqrt{34}$.

PTS: 2 REF: 080919ge STA: G.G.67 TOP: Distance

24 ANS:

25. $d = \sqrt{(-3-4)^2 + (1-25)^2} = \sqrt{49+576} = \sqrt{625} = 25$.

PTS: 2 REF: fall0831ge STA: G.G.67 TOP: Distance

25 ANS: 3 PTS: 2 REF: fall0816ge STA: G.G.1
TOP: Planes

26 ANS: 4 PTS: 2 REF: 011012ge STA: G.G.1
TOP: Planes

27 ANS: 1 PTS: 2 REF: 060918ge STA: G.G.2
TOP: Planes

28 ANS: 1 PTS: 2 REF: 011024ge STA: G.G.3
TOP: Planes

29 ANS: 2 PTS: 2 REF: 080927ge STA: G.G.4
TOP: Planes

30 ANS: 4 PTS: 2 REF: 080914ge STA: G.G.7
TOP: Planes

31 ANS: 3 PTS: 2 REF: 060928ge STA: G.G.8
TOP: Planes

32 ANS: 2 PTS: 2 REF: fall0806ge STA: G.G.9
TOP: Planes

33 ANS: 3

The lateral edges of a prism are parallel.

PTS: 2 REF: fall0808ge STA: G.G.10 TOP: Solids

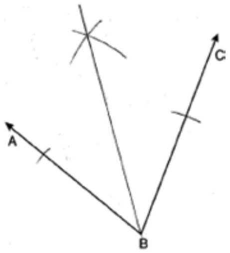
34 ANS: 4 PTS: 2 REF: 060904ge STA: G.G.13
TOP: Solids

35 ANS: 3 PTS: 2 REF: 060925ge STA: G.G.17
TOP: Constructions

36 ANS: 2 PTS: 2 REF: 011004ge STA: G.G.17
TOP: Constructions

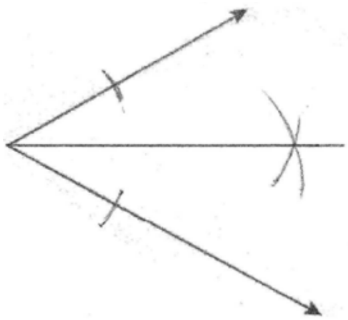
37 ANS: 3 PTS: 2 REF: 080902ge STA: G.G.17
TOP: Constructions

38 ANS:



PTS: 2 REF: 080932ge STA: G.G.17 TOP: Constructions

39 ANS:



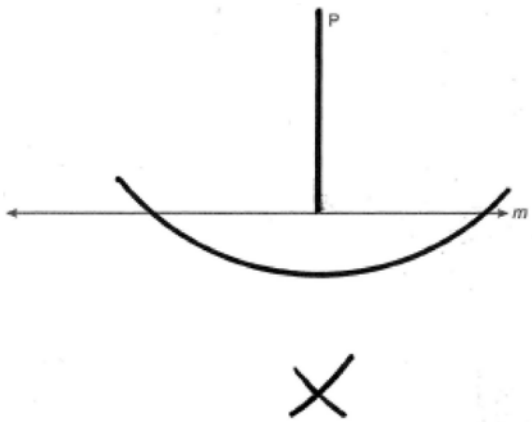
PTS: 2 REF: fall0832ge STA: G.G.17 TOP: Constructions

40 ANS: 3 PTS: 2 REF: fall0804ge STA: G.G.18
TOP: Constructions

41 ANS: 1 PTS: 2 REF: fall0807ge STA: G.G.19
TOP: Constructions

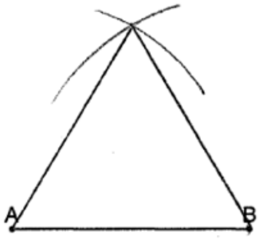
42 ANS: 4 PTS: 2 REF: 011009ge STA: G.G.19
TOP: Constructions

43 ANS:



PTS: 2 REF: 060930ge STA: G.G.19 TOP: Constructions

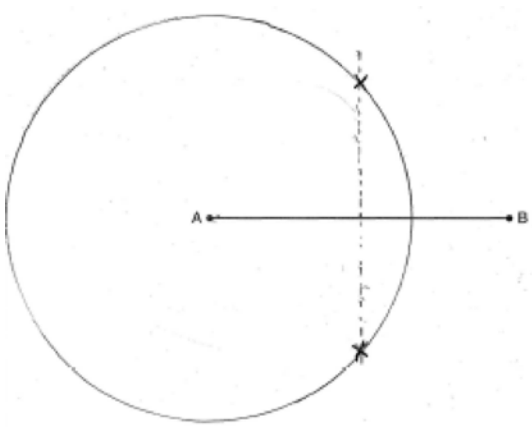
44 ANS:



PTS: 2 REF: 011032ge STA: G.G.20 TOP: Constructions

45 ANS: 2 PTS: 2 REF: 011011ge STA: G.G.22
TOP: Locus

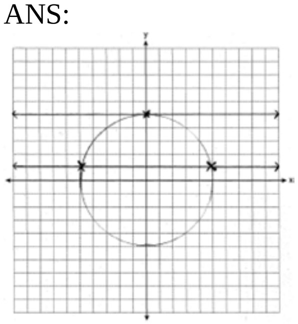
46 ANS:



PTS: 2 REF: 060932ge STA: G.G.22 TOP: Locus

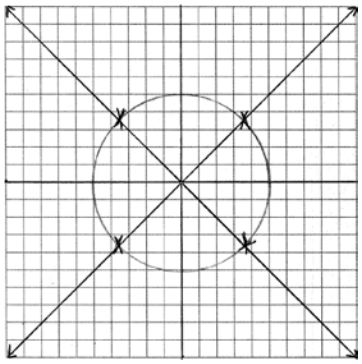
47 ANS: 4 PTS: 2 REF: 060912ge STA: G.G.23
TOP: Locus

48 ANS:



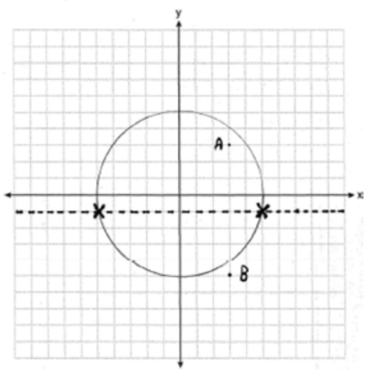
PTS: 4 REF: 080936ge STA: G.G.23 TOP: Locus

49 ANS:



PTS: 4 REF: 011037ge STA: G.G.23 TOP: Locus

50 ANS:



PTS: 4 REF: fall0837ge STA: G.G.23 TOP: Locus

51 ANS: 4

The marked 60º angle and the angle above it are on the same straight line and supplementary. This unmarked supplementary angle is 120º. Because the unmarked 120º angle and the marked 120º angle are alternate exterior angles and congruent, $d \parallel e$.

PTS: 2 REF: 080901ge STA: G.G.35 TOP: Parallel Lines and Transversals

52 ANS: 1

$$a^2 + (5\sqrt{2})^2 = (2\sqrt{15})^2$$

$$a^2 + (25 \times 2) = 4 \times 15$$

$$a^2 + 50 = 60$$

$$a^2 = 10$$

$$a = \sqrt{10}$$

PTS: 2 REF: 011016ge STA: G.G.48 TOP: Pythagorean Theorem

53 ANS: 1

If $\angle A$ is at minimum (50°) and $\angle B$ is at minimum (90°), $\angle C$ is at maximum of 40° (180° - (50° + 90°)). If $\angle A$ is at maximum (60°) and $\angle B$ is at maximum (100°), $\angle C$ is at minimum of 20° (180° - (60° + 100°)).

PTS: 2 REF: 060901ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

54 ANS: 1
In an equilateral triangle, each interior angle is 60° and each exterior angle is 120° (180° - 120°). The sum of the three interior angles is 180° and the sum of the three exterior angles is 360°.

PTS: 2 REF: 060909ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

55 ANS: 1

$$x + 2x + 2 + 3x + 4 = 180$$
$$6x + 6 = 180$$
$$x = 29$$

PTS: 2 REF: 011002ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

56 ANS:
26. $x + 3x + 5x - 54 = 180$

$$9x = 234$$
$$x = 26$$

PTS: 2 REF: 080933ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

57 ANS: 4
$180 - (40 + 40) = 100$

PTS: 2 REF: 080903ge STA: G.G.31 TOP: Isosceles Triangle Theorem

58 ANS: 3 PTS: 2 REF: 011007ge STA: G.G.31
TOP: Isosceles Triangle Theorem

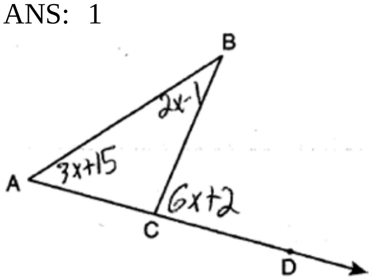
59 ANS:
67. $\dfrac{180 - 46}{2} = 67$

PTS: 2 REF: 011029ge STA: G.G.31 TOP: Isosceles Triangle Theorem

60 ANS: 4
(4) is not true if $\angle PQR$ is obtuse.

PTS: 2 REF: 060924ge STA: G.G.32 TOP: Exterior Angle Theorem

61 ANS: 1



$$3x + 15 + 2x - 1 = 6x + 2$$
$$5x + 14 = 6x + 2$$
$$x = 12$$

PTS: 2 REF: 011021ge STA: G.G.32 TOP: Exterior Angle Theorem

62 ANS: 2
$6 + 17 > 22$

PTS: 2 REF: 080916ge STA: G.G.33 TOP: Triangle Inequality Theorem

63 ANS: 2
$7 + 18 > 6 + 12$

PTS: 2 REF: fall0819ge STA: G.G.33 TOP: Triangle Inequality Theorem

64 ANS: 2
Longest side of a triangle is opposite the largest angle. Shortest side is opposite the smallest angle.

PTS: 2 REF: 060911ge STA: G.G.34 TOP: Angle Side Relationship

65 ANS:
$\overline{AC}$. $m\angle BCA = 63$ and $m\angle ABC = 80$. $\overline{AC}$ is the longest side as it is opposite the largest angle.

PTS: 2 REF: 080934ge STA: G.G.34 TOP: Angle Side Relationship

66 ANS:
5. $\frac{3}{x} = \frac{6+3}{15}$

$9x = 45$

$x = 5$

PTS: 2 REF: 011033ge STA: G.G.46 TOP: Side Splitter Theorem

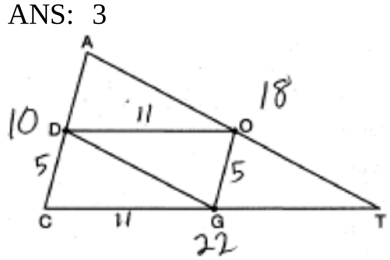
67 ANS: 4
$\triangle ABC \sim \triangle DBE$. $\frac{\overline{AB}}{\overline{DB}} = \frac{\overline{AC}}{\overline{DE}}$

$\frac{9}{2} = \frac{x}{3}$

$x = 13.5$

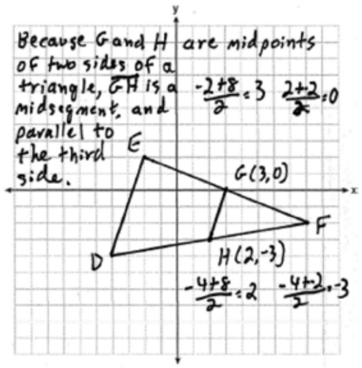
PTS: 2 REF: 060927ge STA: G.G.46 TOP: Side Splitter Theorem

68 ANS: 3



PTS: 2 REF: 080920ge STA: G.G.42 TOP: Midsegments

69 ANS:

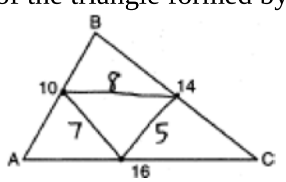


PTS: 4 REF: fall0835ge STA: G.G.42 TOP: Midsegments

70 ANS:

20. The sides of the triangle formed by connecting the midpoints are half the sides of the original triangle.

$5 + 7 + 8 = 20.$



PTS: 2 REF: 060929ge STA: G.G.42 TOP: Midsegments

71 ANS: 3 PTS: 2 REF: fall0825ge STA: G.G.21

TOP: Centroid, Orthocenter, Incenter and Circumcenter

72 ANS: 4 PTS: 2 REF: 080925ge STA: G.G.21

TOP: Centroid, Orthocenter, Incenter and Circumcenter

73 ANS: 2

The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

PTS: 2 REF: 060914ge STA: G.G.43 TOP: Centroid

74 ANS:

6. The centroid divides each median into segments whose lengths are in the ratio 2 : 1. $\overline{TD} = 6$ and $\overline{DB} = 3$

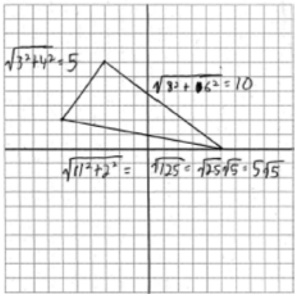
PTS: 2 REF: 011034ge STA: G.G.43 TOP: Centroid

75 ANS: 1

Since $\overline{AC} \cong \overline{BC}$, $m\angle A = m\angle B$ under the Isosceles Triangle Theorem.

PTS: 2 REF: fall0809ge STA: G.G.69 TOP: Triangles in the Coordinate Plane

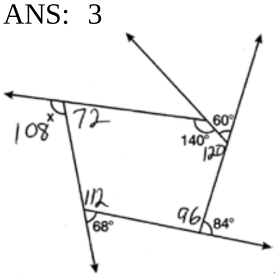
76 ANS:



$15 + 5\sqrt{5}$.

PTS: 4 REF: 060936ge STA: G.G.69 TOP: Triangles in the Coordinate Plane

77 ANS: 3



. The sum of the interior angles of a pentagon is $(5-2)180 = 540$.

PTS: 2 REF: 011023ge STA: G.G.36 TOP: Interior and Exterior Angles of Polygons

78 ANS: 4

$(n-2)180 = (8-2)180 = 1080$. $\frac{1080}{8} = 135$.

PTS: 2 REF: fall0827ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

79 ANS: 1

Opposite sides of a parallelogram are congruent. $4x - 3 = x + 3$. $SV = (2) + 3 = 5$.

$$3x = 6$$
$$x = 2$$

PTS: 2 REF: 011013ge STA: G.G.38 TOP: Parallelograms

80 ANS: 1

$\angle DCB$ and $\angle ADC$ are supplementary adjacent angles of a parallelogram. $180 - 120 = 60$. $\angle 2 = 60 - 45 = 15$.

PTS: 2 REF: 080907ge STA: G.G.38 TOP: Parallelograms

81 ANS: 3

The diagonals of an isosceles trapezoid are congruent. $5x + 3 = 11x - 5$.

$$6x = 18$$
$$x = 3$$

PTS: 2 REF: fall0801ge STA: G.G.40 TOP: Trapezoids

82 ANS:
3. The non-parallel sides of an isosceles trapezoid are congruent. $2x+5=3x+2$

$x=3$

PTS: 2 REF: 080929ge STA: G.G.40 TOP: Trapezoids

83 ANS: 2

The length of the midsegment of a trapezoid is the average of the lengths of its bases. $\dfrac{x+30}{2}=44.$

$x+30=88$

$x=58$

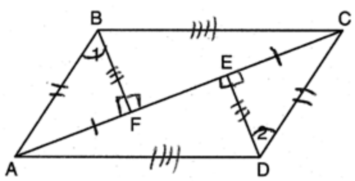
PTS: 2 REF: 011001ge STA: G.G.40 TOP: Trapezoids

84 ANS: 1 PTS: 2 REF: 080918ge STA: G.G.41
TOP: Special Quadrilaterals

85 ANS:
$\overline{JK}\cong\overline{LM}$ because opposite sides of a parallelogram are congruent. $\overline{LM}\cong\overline{LN}$ because of the Isosceles Triangle Theorem. $\overline{LM}\cong\overline{JM}$ because of the transitive property. *JKLM* is a rhombus because all sides are congruent.

PTS: 4 REF: 011036ge STA: G.G.41 TOP: Special Quadrilaterals

86 ANS:



$\overline{FE}\cong\overline{FE}$ (Reflexive Property); $\overline{AE}-\overline{FE}\cong\overline{FC}-\overline{EF}$ (Line Segment Subtraction Theorem); $\overline{AF}\cong\overline{CE}$ (Substitution); $\angle BFA\cong\angle DEC$ (All right angles are congruent); $\triangle BFA\cong\triangle DEC$ (AAS); $\overline{AB}\cong\overline{CD}$ and $\overline{BF}\cong\overline{DE}$ (CPCTC); $\angle BFC\cong\angle DEA$ (All right angles are congruent); $\triangle BFC\cong\triangle DEA$ (SAS); $\overline{AD}\cong\overline{CB}$ (CPCTC); *ABCD* is a parallelogram (opposite sides of quadrilateral *ABCD* are congruent)

PTS: 6 REF: 080938ge STA: G.G.41 TOP: Special Quadrilaterals

87 ANS: 1
The closer a chord is to the center of a circle, the longer the chord.

PTS: 2 REF: 011005ge STA: G.G.49 TOP: Chords

88 ANS: 3
Because $\overline{OC}$ is a radius, its length is 5. Since $CE=2$ $OE=3$. $\triangle EDO$ is a 3-4-5 triangle. If $ED=4$, $BD=8$.

PTS: 2 REF: fall0811ge STA: G.G.49 TOP: Chords

89 ANS: 2

Parallel chords intercept congruent arcs. $m\overset{\frown}{AD}=m\overset{\frown}{BC}=60$. $m\angle CDB=\dfrac{1}{2}m\overset{\frown}{BC}=30$.

PTS: 2 REF: 060906ge STA: G.G.52 TOP: Chords

90 ANS: 2

Parallel chords intercept congruent arcs. $\mathrm{m}\overset{\frown}{AC} = \mathrm{m}\overset{\frown}{BD} = 30$. $180 - 30 - 30 = 120$.

PTS: 2 REF: 080904ge STA: G.G.52 TOP: Chords

91 ANS: 3 PTS: 2 REF: 080928ge STA: G.G.50
TOP: Tangents KEY: common tangency

92 ANS: 4 PTS: 2 REF: fall0824ge STA: G.G.50
TOP: Tangents KEY: common tangency

93 ANS:

18. If the ratio of *TA* to *AC* is 1:3, the ratio of *TE* to *ES* is also 1:3. $x + 3x = 24$. $3(6) = 18$.

$$x = 6$$

PTS: 4 REF: 060935ge STA: G.G.50 TOP: Tangents
KEY: common tangency

94 ANS: 2

$$\frac{87 + 35}{2} = \frac{122}{2} = 61$$

PTS: 2 REF: 011015ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inside circle

95 ANS:

$\angle D$, $\angle G$ and 24° or $\angle E$, $\angle F$ and 84°. $\mathrm{m}\overset{\frown}{FE} = \frac{2}{15} \times 360 = 48$. Since the chords forming $\angle D$ and $\angle G$ are intercepted by $\overset{\frown}{FE}$, their measure is 24°. $\mathrm{m}\overset{\frown}{GD} = \frac{7}{15} \times 360 = 168$. Since the chords forming $\angle E$ and $\angle F$ are intercepted by $\overset{\frown}{GD}$, their measure is 84°.

PTS: 4 REF: fall0836ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inscribed

96 ANS: 4

$$x^2 = (4 + 5) \times 4$$
$$x^2 = 36$$
$$x = 6$$

PTS: 2 REF: 011008ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

97 ANS: 2

$$x^2 = 3(x+18)$$
$$x^2 - 3x - 54 = 0$$
$$(x-9)(x+6) = 0$$
$$x = 9$$

PTS: 2 REF: fall0817ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

98 ANS: 3

$$4(x+4) = 8^2$$
$$4x + 16 = 64$$
$$x = 12$$

PTS: 2 REF: 060916ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

99 ANS: 2

$$4(4x-3) = 3(2x+8)$$
$$16x - 12 = 6x + 24$$
$$10x = 36$$
$$x = 3.6$$

PTS: 2 REF: 080923ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two chords

100 ANS: 3 PTS: 2 REF: fall0814ge STA: G.G.73
TOP: Equations of Circles

101 ANS: 1 PTS: 2 REF: 080911ge STA: G.G.73
TOP: Equations of Circles

102 ANS: 4 PTS: 2 REF: 060922ge STA: G.G.73
TOP: Equations of Circles

103 ANS: 2 PTS: 2 REF: 060910ge STA: G.G.71
TOP: Equations of Circles

104 ANS: 3 PTS: 2 REF: 011010ge STA: G.G.71
TOP: Equations of Circles

105 ANS: 1

$M_x = \frac{-2+6}{2} = 2$. $M_y = \frac{3+3}{2} = 3$. The center is $(2,3)$. $d = \sqrt{(-2-6)^2 + (3-3)^2} = \sqrt{64+0} = 8$. If the diameter is 8, the radius is 4 and $r^2 = 16$.

PTS: 2 REF: fall0820ge STA: G.G.71 TOP: Equations of Circles

106 ANS: 2 PTS: 2 REF: 080921ge STA: G.G.72
TOP: Equations of Circles

107 ANS: 1 PTS: 2 REF: 060920ge STA: G.G.74
TOP: Graphing Circles

108 ANS: 2 PTS: 2 REF: 011020ge STA: G.G.74
TOP: Graphing Circles

109 ANS:
4. $l_1 w_1 h_1 = l_2 w_2 h_2$

$$10 \times 2 \times h = 5 \times w_2 \times h$$

$$20 = 5w_2$$

$$w_2 = 4$$

PTS: 2 REF: 011030ge STA: G.G.11 TOP: Volume

110 ANS: 1

$$3x^2 + 18x + 24$$

$$3(x^2 + 6x + 8)$$

$$3(x + 4)(x + 2)$$

PTS: 2 REF: fall0815ge STA: G.G.12 TOP: Volume

111 ANS:
2016. $V = \frac{1}{3}Bh = \frac{1}{3}s^2 h = \frac{1}{3}12^2 \cdot 42 = 2016$

PTS: 2 REF: 080930ge STA: G.G.13 TOP: Volume

112 ANS: 3
$V = \pi r^2 h = \pi \cdot 6^2 \cdot 27 = 972\pi$

PTS: 2 REF: 011027ge STA: G.G.14 TOP: Volume

113 ANS: 1

$$V = \pi r^2 h$$

$$1000 = \pi r^2 \cdot 8$$

$$r^2 = \frac{1000}{8\pi}$$

$$r \approx 6.3$$

PTS: 2 REF: 080926ge STA: G.G.14 TOP: Volume

114 ANS:
22.4. $V = \pi r^2 h$

$$12566.4 = \pi r^2 \cdot 8$$

$$r^2 = \frac{12566.4}{8\pi}$$

$$r \approx 22.4$$

PTS: 2 REF: fall0833ge STA: G.G.14 TOP: Volume

115 ANS: 1

$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi \cdot 4^2 \cdot 12 \approx 201$

PTS: 2 REF: 060921ge STA: G.G.15 TOP: Volume

116 ANS: 2

Because the triangles are similar, $\frac{m\angle A}{m\angle D} = 1$

PTS: 2 REF: 011022ge STA: G.G.45 TOP: Similarity
KEY: perimeter and area

117 ANS: 4

Corresponding angles of similar triangles are congruent.

PTS: 2 REF: fall0826ge STA: G.G.45 TOP: Similarity
KEY: perimeter and area

118 ANS:

20. $5x + 10 = 4x + 30$

$x = 20$

PTS: 2 REF: 060934ge STA: G.G.45 TOP: Similarity
KEY: basic

119 ANS: 1

$\overline{AB} = 10$ since $\triangle ABC$ is a 6-8-10 triangle. $6^2 = 10x$

$3.6 = x$

PTS: 2 REF: 060915ge STA: G.G.47 TOP: Similarity
KEY: leg

120 ANS: 4

Let $\overline{AD} = x$. $36x = 12^2$

$x = 4$

PTS: 2 REF: 080922ge STA: G.G.47 TOP: Similarity
KEY: leg

121 ANS:

$2\sqrt{3}$. $x^2 = 3 \cdot 4$

$x = \sqrt{12} = 2\sqrt{3}$

PTS: 2 REF: fall0829ge STA: G.G.47 TOP: Similarity
KEY: altitude

122 ANS: 3 PTS: 2 REF: 060905ge STA: G.G.54
TOP: Reflections KEY: basic

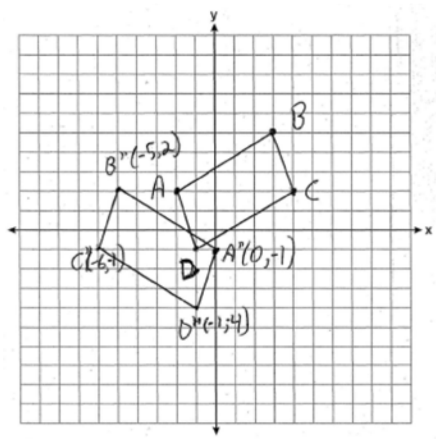
123 ANS: 1
$(x,y) \rightarrow (x+3,y+1)$

PTS: 2 REF: fall0803ge STA: G.G.54 TOP: Translations

124 ANS: 1
$A'(2,4)$

PTS: 2 REF: 011023ge STA: G.G.54 TOP: Compositions of Transformations
KEY: basic

125 ANS:



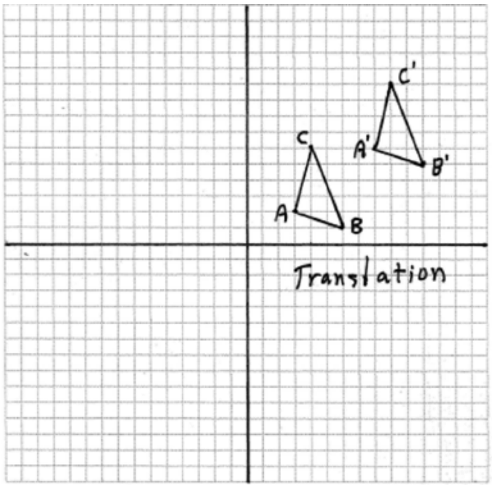
PTS: 4 REF: 060937ge STA: G.G.54 TOP: Compositions of Transformations
KEY: grids

126 ANS: 1
After the translation, the coordinates are $A'(-1,5)$ and $B'(3,4)$. After the dilation, the coordinates are $A''(-2,10)$ and $B''(6,8)$.

PTS: 2 REF: fall0823ge STA: G.G.58 TOP: Compositions of Transformations

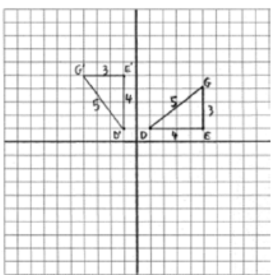
127 ANS: 2 PTS: 2 REF: 011003ge STA: G.G.55
TOP: Properties of Transformations

128 ANS:



PTS: 2 REF: fall0830ge STA: G.G.55 TOP: Properties of Transformations

129 ANS:



$D'(-1,1), E'(-1,5), G'(-4,5)$

PTS: 4 REF: 080937ge STA: G.G.55 TOP: Properties of Transformations

130 ANS: 1

Translations and reflections do not afffect distance.

PTS: 2 REF: 080908ge STA: G.G.59 TOP: Properties of Transformations

131 ANS:

36, because a dilation does not affect angle measure. 10, because a dilation does affect distance.

PTS: 4 REF: 011035ge STA: G.G.59 TOP: Properties of Transformations

132 ANS: 2

A dilation affects distance, not angle measure.

PTS: 2 REF: 080906ge STA: G.G.60 TOP: Identifying Transformations

133 ANS: 3 PTS: 2 REF: 060908ge STA: G.G.60
TOP: Identifying Transformations

134 ANS: 1 PTS: 2 REF: 060903ge STA: G.G.56
TOP: Identifying Transformations

135 ANS: 4 PTS: 2 REF: 080915ge STA: G.G.56
TOP: Identifying Transformations

136 ANS: 2 PTS: 2 REF: 011006ge STA: G.G.56
TOP: Identifying Transformations

137 ANS: 4 PTS: 2 REF: fall0818ge STA: G.G.61
TOP: Analytical Representations of Transformations

138 ANS: 4
Median $\overline{BF}$ bisects $\overline{AC}$ so that $\overline{CF} \cong \overline{FA}$.

PTS: 2 REF: fall0810ge STA: G.G.24 TOP: Statements

139 ANS: 3 PTS: 2 REF: 080924ge STA: G.G.24
TOP: Negations

140 ANS: 4 PTS: 2 REF: fall0802ge STA: G.G.24
TOP: Negations

141 ANS:
True. The first statement is true and the second statement is false. In a disjunction, if either statement is true, the disjunction is true.

PTS: 2 REF: 060933ge STA: G.G.25 TOP: Compound Statements
KEY: disjunction

142 ANS: 3 PTS: 2 REF: 011028ge STA: G.G.26
TOP: Conditional Statements

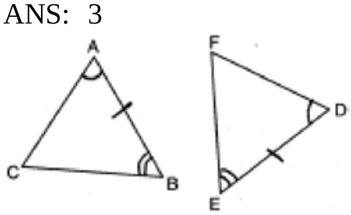
143 ANS: 4 PTS: 2 REF: 060913ge STA: G.G.26
TOP: Conditional Statements

144 ANS:
Contrapositive-If two angles of a triangle are not congruent, the sides opposite those angles are not congruent.

PTS: 2 REF: fall0834ge STA: G.G.26 TOP: Conditional Statements

145 ANS: 3 PTS: 2 REF: 080913ge STA: G.G.28
TOP: Triangle Congruency

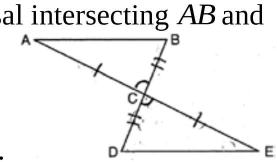
146 ANS: 3



PTS: 2 REF: 060902ge STA: G.G.28 TOP: Triangle Congruency

147 ANS: 4 PTS: 2 REF: 080905ge STA: G.G.29
TOP: Triangle Congruency

148 ANS:
$\overline{AC} \cong \overline{EC}$ and $\overline{DC} \cong \overline{BC}$ because of the definition of midpoint. $\angle ACB \cong \angle ECD$ because of vertical angles. $\triangle ABC \cong \triangle EDC$ because of SAS. $\angle CDE \cong \angle CBA$ because of CPCTC. $\overline{BD}$ is a transversal intersecting $\overline{AB}$ and $\overline{ED}$. Therefore $\overline{AB} \parallel \overline{DE}$ because $\angle CDE$ and $\angle CBA$ are congruent alternate interior angles.



PTS: 6 REF: 060938ge STA: G.G.27 TOP: Triangle Proofs

149 ANS:

Because $\overline{AB} \parallel \overline{DC}$, $\overset{\frown}{AD} \cong \overset{\frown}{BC}$ since parallel chords intersect congruent arcs. $\angle BDC \cong \angle ACD$ because inscribed angles that intercept congruent arcs are congruent. $\overline{AD} \cong \overline{BC}$ since congruent chords intersect congruent arcs. $\overline{DC} \cong \overline{CD}$ because of the reflexive property. Therefore, $\triangle ACD \cong \triangle BDC$ because of SAS.

PTS: 6 REF: fall0838ge STA: G.G.27 TOP: Circle Proofs

150 ANS: 4 PTS: 2 REF: 011019ge STA: G.G.44
TOP: Similarity Proofs

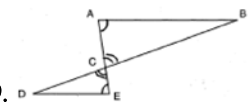
151 ANS: 1

$\triangle PRT$ and $\triangle SRQ$ share $\angle R$ and it is given that $\angle RPT \cong \angle RSQ$.

PTS: 2 REF: fall0821ge STA: G.G.44 TOP: Similarity Proofs

152 ANS: 2

$\angle ACB$ and $\angle ECD$ are congruent vertical angles and $\angle CAB \cong \angle CED$.



PTS: 2 REF: 060917ge STA: G.G.44 TOP: Similarity Proofs