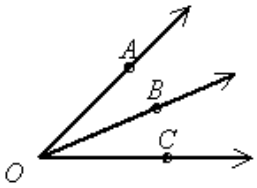
Geometry Final Exam

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

____ 1. If $m\angle BOC = 27$ and $m\angle AOC = 47$, then what is the measure of $\angle AOB$? The diagram is not to scale.

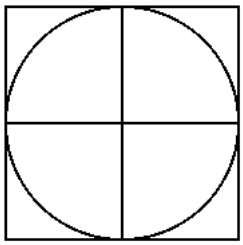


a. 74 b. 40 c. 20 d. 54

____ 2. M is the midpoint of $\overline{CF}$ for the points $C(3, 4)$ and $F(9, 8)$. Find MF.

a. $\sqrt{13}$ b. $2\sqrt{13}$ c. 26 d. 13

____ 3. Find, to the nearest tenth, the area of the region that is inside the square and outside the circle. The circle has diameter 14 inches.



a. 42.1 in.^{2} b. 10.5 in.^{2} c. 153.9 in.^{2} d. 196 in.^{2}

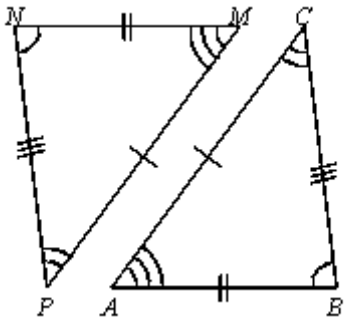
____ 4. When a conditional and its converse are true, you can combine them as a true ____.

a. counterexample
b. biconditional
c. unconditional
d. hypothesis

____ 5. If $\angle A$ and $\angle B$ are supplementary angles and $m\angle A = 4m\angle B$, find $m\angle A$ and $m\angle B$.

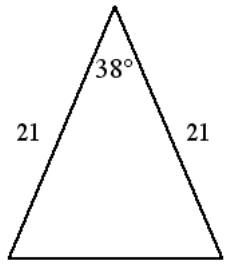
a. 72, 18 b. 144, 36 c. 18, 72 d. 36, 144

____ 6. $\angle ABC \cong$ __?__



a. $\angle PMN$ b. $\angle NPM$ c. $\angle NMP$ d. $\angle MNP$

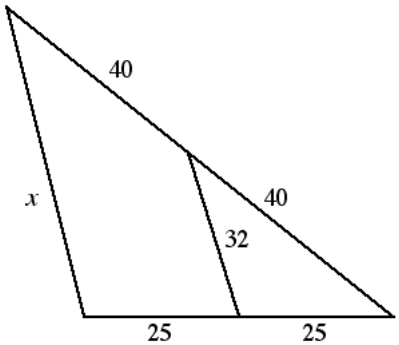
____ 7. What is the measure of a base angle of an isosceles triangle if the vertex angle measures 38° and the two congruent sides each measure 21 units?



Drawing not to scale

a. 71° b. 142° c. 152° d. 76°

____ 8. Find the value of *x*. The diagram is not to scale.

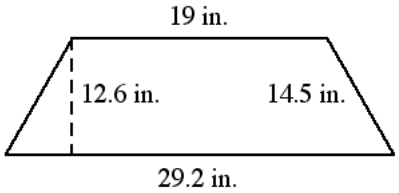


a. 32 b. 50 c. 64 d. 80

____ 9. What is the inverse of this statement?
If he speaks Arabic, he can act as the interpreter.
a. If he does not speak Arabic, he can act as the interpreter.
b. If he speaks Arabic, he can't act as the interpreter.
c. If he can act as the interpreter, then he does not speak Arabic.
d. If he does not speak Arabic, he can't act as the interpreter.

Find the area. The figure is not drawn to scale.

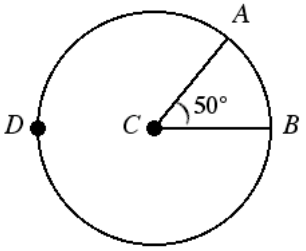
____ 10.



a. 607.32 in.^{2} b. 36.7 in.^{2} c. 303.66 in.^{2} d. 77.2 in.^{2}

____ 11. A kite has diagonals 9.2 ft and 8 ft. What is the area of the kite?
a. 36.8 ft^2 b. 8.6 ft^2 c. 73.6 ft^2 d. 34.4 ft^2

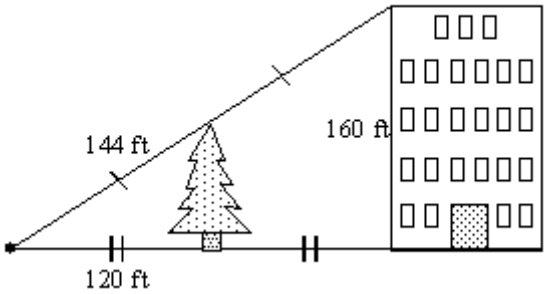
____ 12. Name the major arc and find its measure.



a. arc *ADB*; 50° b. arc *AB*; 50° c. arc *ADB*; 310° d. arc *AB*; 310°

____ 13. A model is built having a scale of 1 : 100,000. How high would a 35,600-ft mountain be in the model? Give your answer to the nearest tenth of an inch.
a. 4.272 in. b. 2.136 in. c. 0.356 in. d. 427,200 in.

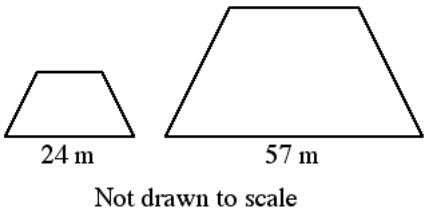
____ 14. Use the information in the diagram to determine the height of the tree to the nearest foot.



a. 80 ft b. 264 ft c. 60 ft d. 72 ft

The figures are similar. The area of one figure is given. Find the area of the other figure to the nearest whole number.

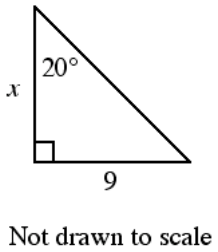
____ 15. The area of the smaller trapezoid is 558 m^2.



a. $3147\ m^2$ b. $3249\ m^2$ c. $576\ m^2$ d. $14\ m^2$

Find the value of *x*. Round your answer to the nearest tenth.

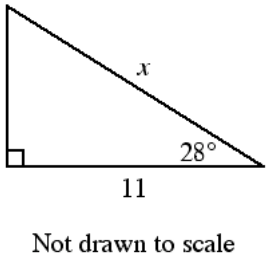
____ 16.



a. 3.3 b. 3.1 c. 24.7 d. 8.5

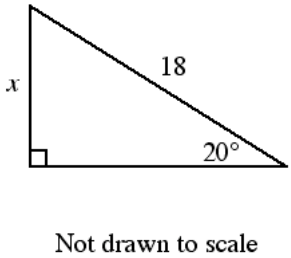
Find the value of *x*. Round to the nearest tenth.

____ 17.



a. 12.5 b. 10 c. 13 d. 9.7

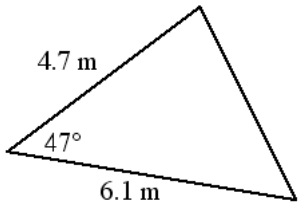
____ 18.



a. 52.6 b. 52.9 c. 6.2 d. 6.5

Find the area of the triangle. Give the answer to the nearest tenth. The drawing may not be to scale.

____ 19.



a. $10.5\ m^2$ b. $9.8\ m^2$ c. $19.6\ m^2$ d. $21.0\ m^2$

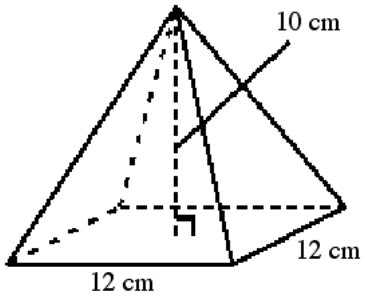
____ 20. Use Euler's Formula to find the missing number.
Vertices: 16
Edges: 37

Faces:

a. 24 b. 22 c. 23 d. 26

Find the volume of the square pyramid shown. Round to the nearest tenth as necessary.

____ 21.

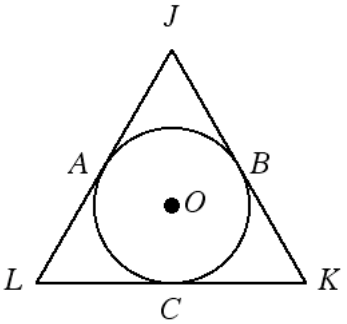


Not drawn to scale

a. $40\ cm^3$ b. $480\ cm^3$ c. $147.3\ cm^3$ d. $720\ cm^3$

____ 22. Find the similarity ratio of a cube with volume $729\ m^3$ to a cube with volume $3375\ m^3$.
a. 81 : 225 b. 3 : 5 c. 5 : 3 d. 225 : 81

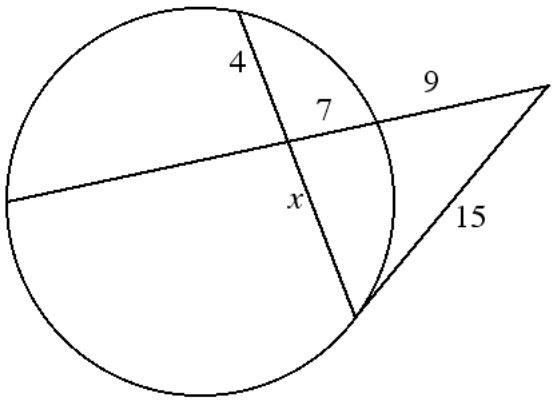
____ 23. $\overline{JK}$, $\overline{KL}$, and $\overline{LJ}$ are all tangent to O (not drawn to scale). $JA = 9$, $AL = 10$, and $CK = 14$. Find the perimeter of ΔJKL.



a. 66 b. 38 c. 46 d. 33

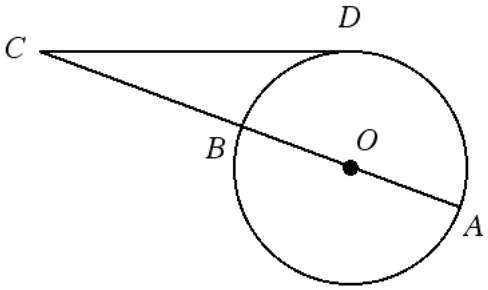
Find the value of *x*. If necessary, round your answer to the nearest tenth. The figure is not drawn to scale.

____ 24. The figure consists of a chord, a secant and a tangent to the circle. Round to the nearest hundredth, if necessary.



a. 15.75 b. 9 c. 5.14 d. 28

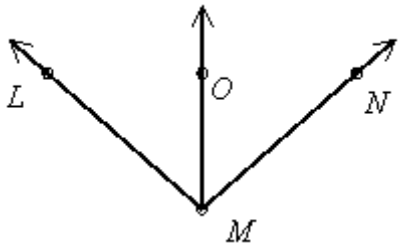
____ 25. Find the diameter of the circle for $BC = 16$ and $DC = 28$. Round to the nearest tenth. (The diagram is not drawn to scale.)



a. 33 b. 49 c. 14.3 d. 65

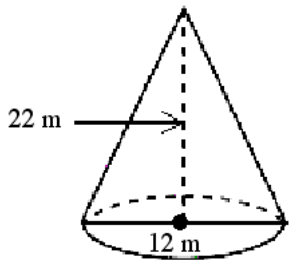
Short Answer

26. $\overrightarrow{MO}$ bisects $\angle LMN$, $m\angle LMO = 8x - 23$, and $m\angle NMO = 2x + 37$. Solve for x and find $m\angle LMN$. The diagram is not to scale.



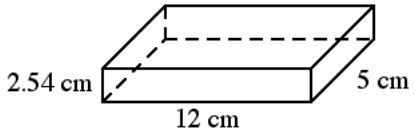
Find the volume of the cone shown as a decimal rounded to the nearest tenth.

27.



Not drawn to scale

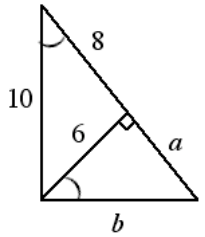
28. A jewelry store buys small boxes in which to wrap items that they sell. The diagram below shows one of the boxes. Find the lateral area and the surface area of the box to the nearest whole number.



Not drawn to scale

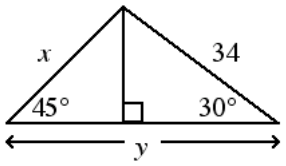
Solve for *a* and *b*.

29.

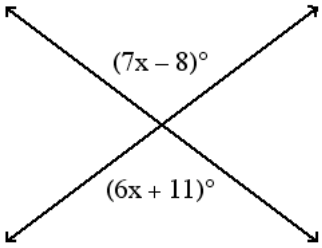


30. The widths of two similar rectangles are 16 cm and 14 cm. What is the ratio of the perimeters? Of the areas?

31. Find the value of x and y rounded to the nearest tenth.



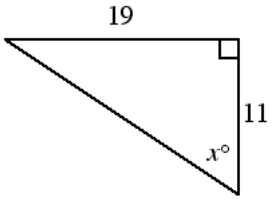
32. Find the value of *x*.



Drawing not to scale

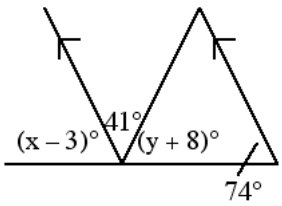
Find the value of *x* to the nearest degree.

33.



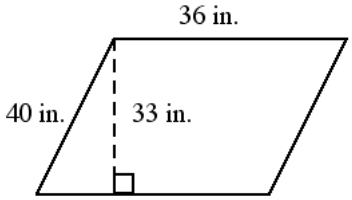
Not drawn to scale

34. Find the values of *x* and *y*. The diagram is not to scale.



Find the area. The figure is not drawn to scale.

35.



Geometry Final Exam
Answer Section

MULTIPLE CHOICE

1. ANS: C DIF: L1 REF: 1-4 Measuring Segments and Angles
   OBJ: 1-4.2 Finding Angle Measures STO: IN G.1.1 TOP: 1-4 Example 6
   KEY: Angle Addition Postulate
   MSC: NAEP M1e, NAEP M1f, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.13, TV.LV20.14
2. ANS: A DIF: L2 REF: 1-6 The Coordinate Plane
   OBJ: 1-6.2 Finding the Midpoint of a Segment STO: IN G.1.1
   KEY: coordinate plane,Midpoint Formula
   MSC: NAEP M1e, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52
3. ANS: A DIF: L2 REF: 1-7 Perimeter¸ Circumference¸ and Area
   OBJ: 1-7.2 Finding Area STO: IN G.2.5, IN G.3.3, IN G.6.7
   TOP: 1-7 Example 6 KEY: circle,square,area
   MSC: NAEP M1c, NAEP M1h, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52
4. ANS: B DIF: L1 REF: 2-2 Biconditionals and Definitions
   OBJ: 2-2.1 Writing Biconditionals STO: IN G.8.4, IN G.8.6, IN G.8.7
   TOP: 2-2 Example 1 KEY: conditional statement,biconditional statement
   MSC: NAEP G1c, NAEP G5a, CAT5.LV20.54, IT.LV16.CP, IT.LV16.PS, S9.TSK2.PRA, S10.TSK2.PRA, TV.LV20.17, TV.LV20.18
5. ANS: B DIF: L2 REF: 2-5 Proving Angles Congruent
   OBJ: 2-5.1 Identifying Angle Pairs STO: IN G.8.8, IN G.8.7
   KEY: supplementary angles
   MSC: NAEP G3g, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.13, TV.LV20.14
6. ANS: D DIF: L1 REF: 4-1 Congruent Figures
   OBJ: 4-1.1 Congruent Figures STO: IN G.2.3, IN G.8.8, IN G.4.6
   TOP: 4-1 Example 1 KEY: congruent figures,corresponding parts
   MSC: NAEP G2e, CAT5.LV20.50, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.14, TV.LV20.16
7. ANS: A DIF: L1 REF: 4-5 Isosceles and Equilateral Triangles
   OBJ: 4-5.1 The Isosceles Triangle Theorems STO: IN G.4.1, IN G.8.8
   TOP: 4-5 Example 3
   KEY: isosceles triangle,Converse of Isosceles Triangle Theorem,Triangle Angle-Sum Theorem
   MSC: NAEP G3f, CAT5.LV20.50, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.14, TV.LV20.16
8. ANS: C DIF: L1 REF: 5-1 Midsegments of Triangles
   OBJ: 5-1.1 Using Properties of Midsegments STO: IN G.4.5, IN G.4.9

TOP: 5-1 Example 1 KEY: midsegment,Triangle Midsegment Theorem
MSC: NAEP G3f, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.13, TV.LV20.14

9. ANS: D DIF: L1
REF: 5-4 Inverses¸ Contrapositives¸ and Indirect Reasoning
OBJ: 5-4.1 Writing the Negation¸ Inverse¸ and Contrapositive STO: IN G.8.5, IN G.8.8
TOP: 5-4 Example 2 KEY: contrapositive
MSC: NAEP G5a, CAT5.LV20.54, IT.LV16.CP, IT.LV16.PS, S9.TSK2.PRA, S10.TSK2.PRA, TV.LV20.16, TV.LV20.17

10. ANS: C DIF: L1
REF: 7-4 Areas of Trapezoids¸ Rhombuses¸ and Kites
OBJ: 7-4.1 Area of a Trapezoid STO: IN G.2.5, IN G.3.3
TOP: 7-4 Example 1 KEY: trapezoid,area
MSC: NAEP M1h, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52

11. ANS: A DIF: L1
REF: 7-4 Areas of Trapezoids¸ Rhombuses¸ and Kites
OBJ: 7-4.2 Finding Areas of Rhombuses and Kites STO: IN G.2.5, IN G.3.3
TOP: 7-4 Example 3 KEY: area,kite
MSC: NAEP M1h, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52

12. ANS: C DIF: L1 REF: 7-6 Circles and Arcs
OBJ: 7-6.1 Central Angles and Arcs STO: IN G.6.2, IN G.6.5, IN G.6.6, IN G.6.7
TOP: 7-6 Example 3 KEY: major arc,measure of an arc,arc
MSC: NAEP M1h, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.13, TV.LV20.14

13. ANS: A DIF: L2 REF: 8-1 Ratios and Proportions
OBJ: 8-1.1 Using Ratios and Proportions TOP: 8-1 Example 4
KEY: proportion,Cross-Product Property,scale,word problem
MSC: NAEP N4c, CAT5.LV20.46, CAT5.LV20.54, CAT5.LV20.55, IT.LV16.CP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.NS, S10.TSK2.GM, S10.TSK2.NS, TV.LV20.10, TV.LV20.13

14. ANS: A DIF: L1 REF: 8-3 Proving Triangles Similar
OBJ: 8-3.2 Applying AA¸ SAS¸ and SSS Similarity
STO: IN G.2.3, IN G.4.4, IN G.4.6, IN G.8.8 TOP: 8-3 Example 4
KEY: Angle-Angle Similarity Postulate,word problem
MSC: NAEP G2e, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.13, TV.LV20.14

15. ANS: A DIF: L1 REF: 8-6 Perimeters and Areas of Similar Figures
OBJ: 8-6.1 Finding Perimeters and Areas of Similar Figures
STO: IN G.2.3, IN G.2.5, IN G.3.2, IN G.4.4 TOP: 8-6 Example 2
KEY: similar figures,area,trapezoid
MSC: NAEP M2g, NAEP N4c, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52

16. ANS: C DIF: L1 REF: 9-1 The Tangent Ratio
OBJ: 9-1.1 Using Tangents in Triangles STO: IN G.5.4, IN G.5.6
TOP: 9-1 Example 2 KEY: side length using tangent,tangent,tangent ratio
MSC: NAEP M1m, CAT5.LV20.45, CAT5.LV20.46, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, IT.LV16.DP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16, TV.LV20.47

17. ANS: A DIF: L1 REF: 9-2 Sine and Cosine Ratios
OBJ: 9-2.1 Using Sine and Cosine in Triangles STO: IN G.5.4, IN G.5.6
TOP: 9-2 Example 2
KEY: cosine,side length using since and cosine,cosine ratio
MSC: NAEP M1m, CAT5.LV20.45, CAT5.LV20.46, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, IT.LV16.DP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16, TV.LV20.47

18. ANS: C DIF: L1 REF: 9-2 Sine and Cosine Ratios
OBJ: 9-2.1 Using Sine and Cosine in Triangles STO: IN G.5.4, IN G.5.6
TOP: 9-2 Example 2 KEY: sine,side length using since and cosine,sine ratio
MSC: NAEP M1m, CAT5.LV20.45, CAT5.LV20.46, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, IT.LV16.DP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16, TV.LV20.47

19. ANS: A DIF: L1 REF: 9-5 Trigonometry and Area
OBJ: 9-5.2 Finding the Area of a Triangle TOP: 9-5 Example 3
KEY: area of a triangle,area,sine
MSC: NAEP M1h, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16

20. ANS: C DIF: L1 REF: 10-1 Space Figures and Nets
OBJ: 10-1.1 Identifying Nets of Space Figures
STO: IN G.7.1, IN G.7.2, IN G.7.3 TOP: 10-1 Example 3
KEY: polyhedron,face,vertices,edge,Euler's Formula
MSC: NAEP G1b, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.14, TV.LV20.17

21. ANS: B DIF: L1 REF: 10-6 Volumes of Pyramids and Cones
OBJ: 10-6.1 Finding Volume of a Pyramid STO: IN G.7.7
TOP: 10-6 Example 1
KEY: volume of a pyramid,pyramid,volume formulas,volume
MSC: NAEP M1j, CAT5.LV20.46, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.NS, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.NS, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.17, TV.LV20.52

22. ANS: B DIF: L1 REF: 10-8 Areas and Volumes of Similar Solids
OBJ: 10-8.1 Finding Relationships in Area and Volume STO: IN G.7.6, IN G.7.7
TOP: 10-8 Example 2 KEY: similarity ratio,volumes of similar solids

MSC: NAEP M2g, CAT5.LV20.50, CAT5.LV20.51, CAT5.LV20.52, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.NS, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.NS, S10.TSK2.PRA, TV.LV20.10, TV.LV20.13, TV.LV20.14, TV.LV20.52

23. ANS: A DIF: L1 REF: 11-1 Tangent Lines
OBJ: 11-1.2 Using Multiple Tangents STO: IN G.6.2, IN G.6.3, IN G.6.5, IN G.8.8
TOP: 11-1 Example 5 KEY: properties of tangents,tangent to a circle,triangle
MSC: NAEP G3e, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16, TV.LV20.52

24. ANS: A DIF: L2 REF: 11-4 Angle Measures and Segment Lengths
OBJ: 11-4.2 Finding Segment Lengths STO: IN G.6.2, IN G.6.3, IN G.6.5, IN G.8.8
KEY: circle,chord,intersection inside the circle,intersection outside the circle,secant,tangent to a circle
MSC: NAEP G3e, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16

25. ANS: A DIF: L1 REF: 11-4 Angle Measures and Segment Lengths
OBJ: 11-4.2 Finding Segment Lengths STO: IN G.6.2, IN G.6.3, IN G.6.5, IN G.8.8
TOP: 11-4 Example 3
KEY: circle,intersection outside the circle,secant,tangent,diameter
MSC: NAEP G3e, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16

SHORT ANSWER

26. ANS:
$x = 10, m\angle LMN = 114$

DIF: L1 REF: 1-5 Basic Constructions
OBJ: 1-5.2 Constructing Bisectors STO: IN G.1.2, IN G.4.2, IN G.8.9
TOP: 1-5 Example 4 KEY: angle bisector
MSC: NAEP G3b, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16

27. ANS:
829.4 m^3

DIF: L1 REF: 10-6 Volumes of Pyramids and Cones
OBJ: 10-6.2 Finding Volume of a Cone STO: IN G.7.7 TOP: 10-6 Example 4
KEY: volume of a cone,volume formulas,volume,cone
MSC: NAEP M1j, CAT5.LV20.46, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.NS, S9.TSK2.PRA,

S10.TSK2.GM, S10.TSK2.NS, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.17, TV.LV20.52

28. ANS:
181 cm^2; 206 cm^2

DIF: L2 REF: 10-3 Surface Areas of Prisms and Cylinders
OBJ: 10-3.1 Finding Surface Area of a Prism STO: IN G.7.7
TOP: 10-3 Example 2
KEY: surface area of a prism,lateral area,prism,surface area formulas,surface area,word problem
MSC: NAEP M1j, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16

29. ANS:
$a = \frac{9}{2}$, $b = \frac{15}{2}$

DIF: L2 REF: 8-4 Similarity in Right Triangles
OBJ: 8-4.1 Using Similarity in Right Triangles
STO: IN G.2.3, IN G.4.4, IN G.4.6, IN G.4.7, IN G.5.2, IN G.8.8
TOP: 8-4 Example 2 KEY: corollaries of the geometric mean,proportion
MSC: NAEP G2e, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52

30. ANS:
8 : 7 and 64 : 49

DIF: L1 REF: 8-6 Perimeters and Areas of Similar Figures
OBJ: 8-6.1 Finding Perimeters and Areas of Similar Figures
STO: IN G.2.3, IN G.2.5, IN G.3.2, IN G.4.4 TOP: 8-6 Example 1
KEY: perimeter,area,similar figures
MSC: NAEP M2g, NAEP N4c, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52

31. ANS:
$x = 24.0$, $y = 46.4$

DIF: L2 REF: 7-3 Special Right Triangles
OBJ: 7-3.2 Using 30°-60°-90° Triangles STO: IN G.4.7, IN G.5.3, IN G.5.6
TOP: 7-3 Example 5 KEY: special right triangles,leg,hypotenuse
MSC: NAEP G3d, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52

32. ANS:
–19

DIF: L1 REF: 2-5 Proving Angles Congruent
OBJ: 2-5.2 Theorems About Angles STO: IN G.8.8, IN G.8.7
TOP: 2-5 Example 4 KEY: vertical angles,Vertical Angles Theorem
MSC: NAEP G3g, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.CP, S9.TSK2.GM, S10.TSK2.GM, TV.LV20.13, TV.LV20.14

33. ANS:
60

DIF: L1 REF: 9-1 The Tangent Ratio
OBJ: 9-1.1 Using Tangents in Triangles STO: IN G.5.4, IN G.5.6
TOP: 9-1 Example 3
KEY: inverse of tangent,tangent,tangent ratio,angle measure using tangent
MSC: NAEP M1m, CAT5.LV20.45, CAT5.LV20.46, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, IT.LV16.DP, IT.LV16.FR, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16, TV.LV20.47

34. ANS:
$x = 77$, $y = 57$

DIF: L1 REF: 3-1 Properties of Parallel Lines
OBJ: 3-1.2 Properties of Parallel Lines STO: IN G.1.3, IN G.8.8
TOP: 3-1 Example 5 KEY: corresponding angles,parallel lines
MSC: NAEP M1f, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.16

35. ANS:
1188 in.^{2}

DIF: L1 REF: 7-1 Areas of Parallelograms and Triangles
OBJ: 7-1.1 Area of a Parallelogram STO: IN G.2.5, IN G.3.3, IN G.4.7
TOP: 7-1 Example 1 KEY: area,parallelogram,base,height
MSC: NAEP M1h, CAT5.LV20.50, CAT5.LV20.55, CAT5.LV20.56, IT.LV16.AM, IT.LV16.CP, S9.TSK2.GM, S9.TSK2.PRA, S10.TSK2.GM, S10.TSK2.PRA, TV.LV20.13, TV.LV20.14, TV.LV20.52