

LIBERAL ARTS MATH I GEOMETRICS A NAME _____

Show all work on this test or on separate paper.

Calculators are allowed. You may leave answers in π .

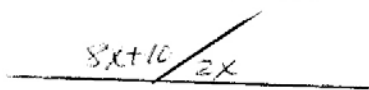
Turn in all worksheets! Give UNITS as necessary.

1. Answer in metric units:

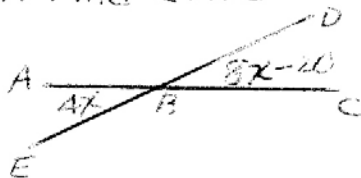
- a) A _____ is slightly more than a quart.
- b) A _____ is approximately 2.2 pounds.
- c) A _____ is the width of an aspirin tablet.

- 2a) 8.4 kg = _____ g
- b) 8.4 m = _____ cm
- c) 8.4 cl = _____ l
- d) 450 cm = _____ mm
- e) 450 l = _____ mL
- f) 450 g = _____ kg

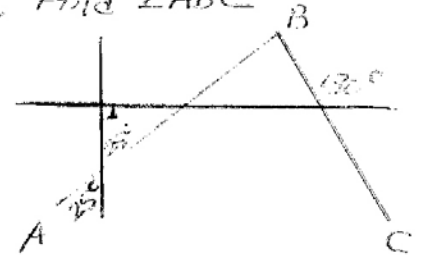
3. Find the angles.



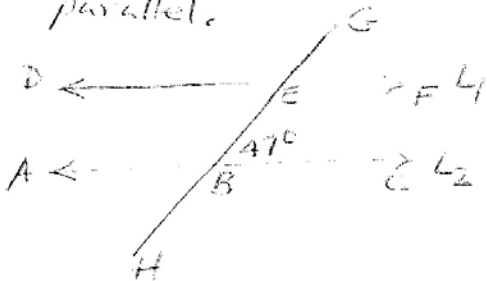
4. Find $\angle ABE$



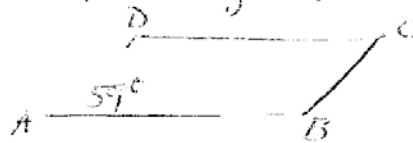
5. Find $\angle ABC$



6. Given L_1 and L_2 are parallel.



7. Given the parallelogram



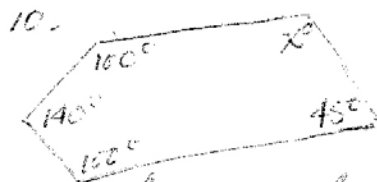
- a) Find $\angle B$
- b) True or False: The diagonals of a parallelogram are equal.

8a) A triangle with two equal sides is said to be _____

a) A triangle with an angle of 45° would be _____

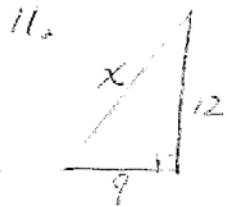
c) For a triangle with angles 84° and 42° , the third angle is _____ the triangle is _____

9. Find the sum of the angles of a hexagon. (6 sides)



a) Find the sum of the angles

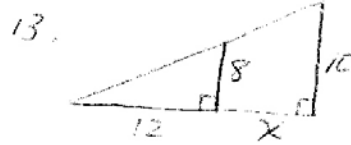
a) Find x.



Find X.



Find X.



Set up a ratio and find X.

14. If a yard stick (3 feet) casts a shadow of 5 feet. How tall is a tree that casts a 60 ft shadow?

15. How many square inches are in a square foot?

16. How many square meters are in a square dekameter?

17. How many cubic centimeters are in a cubic meter?

18. If the dimensions of a rectangle are doubled, what happens to the area?

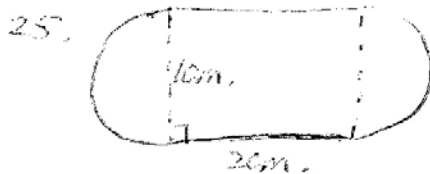
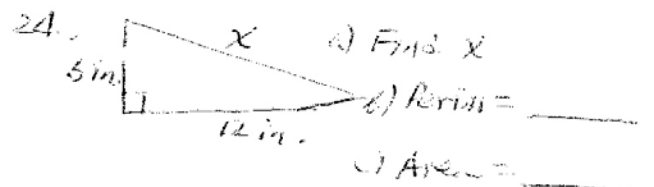
19. If the dimensions of a rectangle are tripled, what happens to the area?

20. If the dimensions of a rectangular box are doubled, what happens to the volume of the box?

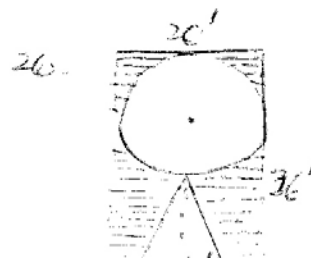
21. Find the circumference of a circle of radius 20 cm.

22. If a pizza of 4 inch radius costs \$1.50, how much should a pizza with 12 in. radius cost?

23. If a sphere with 4 inch radius costs \$1.50, how much should a sphere with 12 in radius cost?



Perim =



Find shaded area in terms of π .

27. A box is 3" by 7" by 10"

a) Volume =

b) Surface Area =

28. Find the volume of a cylinder whose radius is 10m and height is 20m.

29. Find the volume of a cone whose base radius is 20 cm and whose height is 30 cm.

30. Find the volume of a sphere whose

a) radius is 10 ft.

b) diameter is 10 ft.

Multiple Choice:

31. What is the area of a triangle whose base is 18 feet and height is 30 inches?

- A) 360 sq ft B) 180 sq ft
C) 30 sq ft D) 15 sq ft

32. What is the volume in centiliters of a 525-liter bottle?

- a) 5250 cl. b) 225 cl.
c) 52.5 cl. d) 0.525 cl.

33. Select the geometric figure that has the following characteristics:

- i) four sided.
ii) opposite sides parallel and adjacent sides equal.
iii) right angle.

- a) rectangle b) square
c) trapezoid d) rhombus.

34. What measure could be used to record the amount of wall surface that can be covered by a can of paint?

- a) liters b) gallons
c) square feet d) cubic feet.

$$V = \frac{1}{3} \pi r^2 h$$

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

$$V = \frac{4}{3} \pi r^3$$

35. Select the formula for calculating the total surface area SA of a right circular cylinder.



- a) $SA = \pi r^2 h$
- b) $SA = h(2\pi r) + \pi r^2$
- c) $SA = 2\pi r^2 + h(2\pi r)$
- d) $SA = 2(2\pi r) + h(2\pi r)$

36. A tree trunk has a 1.2 meter diameter. What is its circumference?

- a) $1.44\pi \text{ m}^2$
- b) $1.2\pi \text{ m}$
- c) $0.6\pi \text{ m}$
- d) $0.36\pi \text{ m}^2$

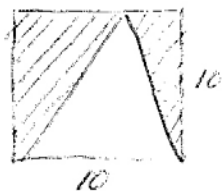
37. What will be the cost of carpeting an office that measures 12 ft by 15 ft if carpet costs \$12.50 per square yard?

- a) \$2250
- b) \$750
- c) \$650
- d) \$350

38. A 12-foot tower is to be supported by three cables, each attached to the top of the tower and to points on the ground which are 5 feet from the base of the tower. What is the total length of these cables?

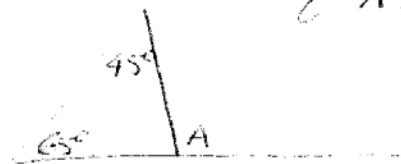
- a) 52 ft
- b) 42 ft
- c) 39 ft
- d) 13 ft

39. Given the square, find the shaded area.



- a) 100
- b) 75
- c) 50
- d) 40

40. Find the value of A.

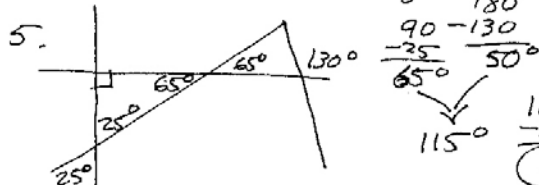


- a) 135°
- b) 115°
- c) 110°
- d) 65°

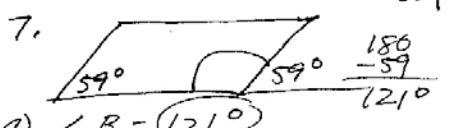
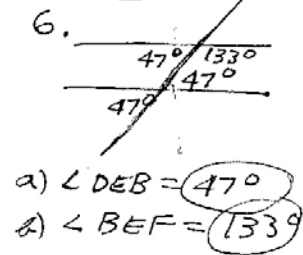
LAM I EXAM GEOMETRICS Solutions Form A

- 1a) liter 2a) 8400g d) 4500 mm 3. $8x + 10 + 2x = 180$
 b) Kilogram G) 840cm e) 450,000 ml. $10x + 10 = 180$
 c) centimeter c) 0.084 l. f) 0.45 Kg. $10x = 170$
 $x = 17$
 $8x + 10 = 146$
 $2x = 39$

4. $4x = 8x - 20$
 $20 = 4x$
 $x = 5$
 $\angle ABE = 4x = 20^\circ$

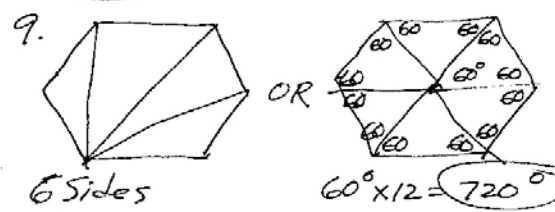


5. $\frac{180}{90 - 130} = \frac{65}{50}$
 $\frac{180}{-35} = \frac{65}{50}$
 115
 $\frac{180}{-115} = \frac{65}{65}$



- 8a) isosceles
 b) obtuse.
 c) 54°
 scalene or acute.

a) Diagonals NOT equal.
 False



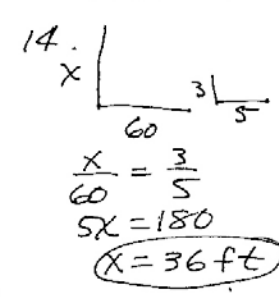
10. 5 Sides
 -2
 $\frac{3 \text{ Triangles}}{x \cdot 180^\circ}$
 540° Sum of \angle s.
 -385° other \angle s
 $155^\circ = x$

11. $9^2 + 12^2 = x^2$
 $81 + 144 = x^2$
 $225 = x^2$
 $x = \pm 15$
 $x = 15$

12. $4^2 + x^2 = 6^2$
 $16 + x^2 = 36$
 $x^2 = 20$
 $x = \pm \sqrt{20}$
 $x = 2\sqrt{5}$ or 4.47

$\frac{-2}{4 \text{ Triangles}}$
 $\frac{x \cdot 180^\circ}{720^\circ}$

13. $\frac{8}{10} = \frac{12}{12+x}$
 $8(x+12) = 10 \cdot 12$
 $8x + 96 = 120$
 $8x = 24$
 $x = 3$



15. $12^2 = 144$
 16. $10^2 = 100$
 17. $100^3 = 1000000$
 18. Mult times $2^2 = 4 = 40 \text{ cm}$
 19. Mult times $3^2 = 9$ Mult \angle s
 20. Mult times $2^3 = 8$
 21. $C = \pi d$
 $C = 2\pi r$
 $C = 2\pi(200)$

22. Pizza = Area
 $\frac{\pi r^2}{\pi R^2} = \frac{\pi A^2}{\pi 12^2} = \frac{150}{x}$
 $\frac{\pi \cdot 16}{\pi \cdot 144} = \frac{150}{x}$
 $9 x = 9(150)$
 $x = 14,50$

23. Vol:
 $\frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi R^3} = \frac{\frac{4}{3}\pi \cdot 4^3}{\frac{4}{3}\pi \cdot 12^3} = \frac{1.50}{x}$
 $\frac{64}{1728} = \frac{1.50}{x}$
 $\frac{1}{27} = \frac{1.50}{x}$
 $x = 40,50$

24.

$x = 13 \text{ ft}$

25. a) Perim = $40 + \text{Circle}$, $C = \pi d$
 $= (40 + 10\pi) \text{ m}$. $d = 10 \text{ m}$
 $r = 5 \text{ m}$

b) Area = Rectangle + Circle
 $= LW + \pi r^2$
 $= 10 \cdot 20 + \pi \cdot 5^2$
 $= (200 + 25\pi) \text{ m}^2$

26. A = Rect. - Circle - Triangle
 $= 20 \times 36 - 10^2\pi - \frac{1}{2} \cdot 20 \cdot 16$
 $= -30 - 100\pi - 160 = (560 - 100\pi) \text{ ft}^2 = 242 \text{ m}^2$

27a) $V = LWH$
 $= 3 \times 7 \times 10$
 $= 210 \text{ cu in}$

28. $V = \pi r^2 h$
 $= \pi \cdot 10^2 \cdot 20$
 $= 2000\pi \text{ m}^3$

29. $V = \frac{1}{3}\pi r^2 h$
 $= \frac{1}{3}\pi \cdot 20^2 \cdot 30$
 $= 4000\pi \text{ m}^3$

30. $V = \frac{4}{3}\pi r^3$
 $\frac{4}{3}\pi r^3 = 4000\pi$
 $r^3 = 3000$
 $r = \sqrt[3]{3000} \approx 14.42 \text{ ft}$

31. D
 32. B
 33. B
 34. C
 35. C
 $= 30 \text{ in}$
 36. B
 37. D
 $= 30 \text{ in}^2$
 38. C
 39. C
 $\frac{4}{3}\pi 10^3 = 4000\pi$
 $\frac{4}{3}\pi 5^3 = 500\pi$

25. a) Perim = $40 + \text{Circle}$, $C = \pi d$
 $= (40 + 10\pi) \text{ m}$. $d = 10 \text{ m}$
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27a) $V = LWH$
 $= 2 \cdot 21 + 2 \cdot 70 + 2 \cdot 30$
 $= 42 + 140 + 60$
 $= 242 \text{ m}^2$

29. $V = \frac{1}{3}\pi r^2 h$
 $= \frac{1}{3}\pi \cdot 20^2 \cdot 30$
 $= 4000\pi \text{ m}^3$