Bench Mark Review 7 Geometry

[G16.0] **1.** **Perform** each construction and **list all steps**.

a. Construct a line perpendicular to line ℓ through point P.

▪ P

_____

1.
2.
3.

b. Construct a line parallel to line ℓ through point P.

▪ P

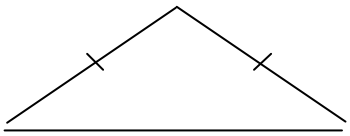
_____

1.
2.
3.

[G12.0] **2.** If x is a whole number, what is the *smallest possible* value of x?

x **x**

Please continue ☞



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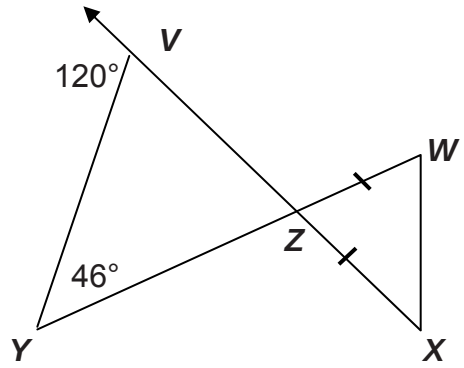
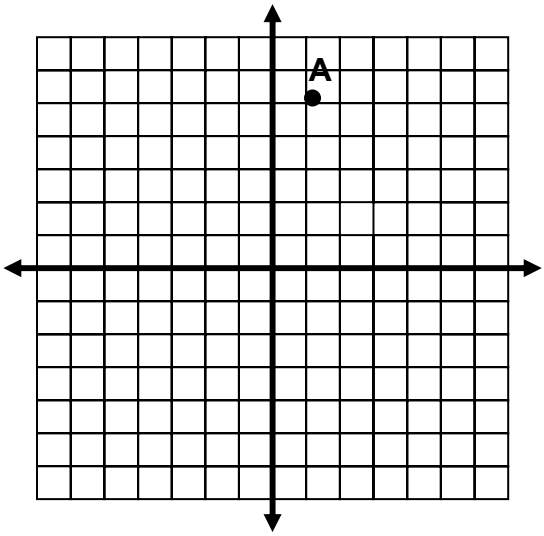
[G12.0] **3.** What is m∠**ZXW**? Be careful!



G22.0] **4.** Given the point **A(1, 5)**, find the coordinates of A' when:



a.) A is rotated 180° about the origin.

A' = (,)

b.) A is reflected about the line y = x.

A' = (,)

[G6.0] **5.** An isosceles triangle has a base of **15 inches**. What is the ***smallest*** possible value for the length of the two sides?

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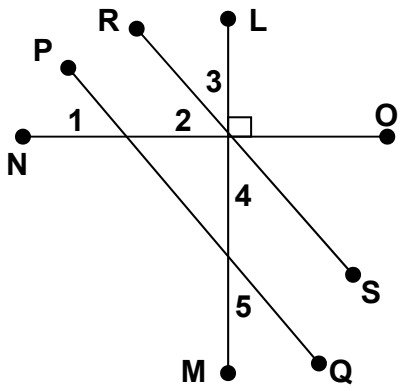
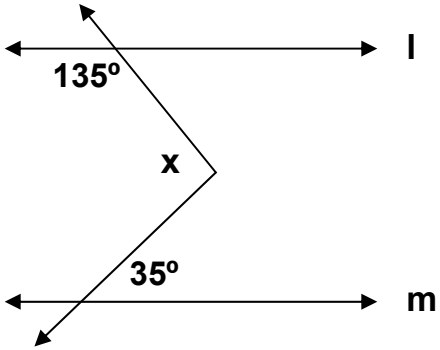
[G7.0] **6.** Given: $\overline{PQ}$ || $\overline{RS}$
LM ⊥ NO
m∠1 = 35°



Find: **m∠ 2, m∠ 3, m∠ 4, and m∠ 5,**

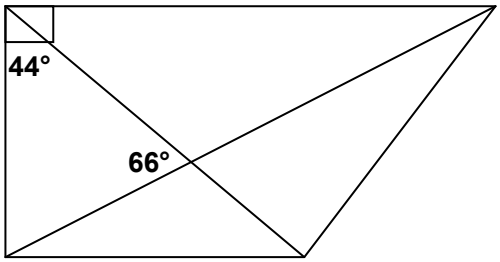
[G7.0] **7.** Given that **l || m**, what is the value of x?



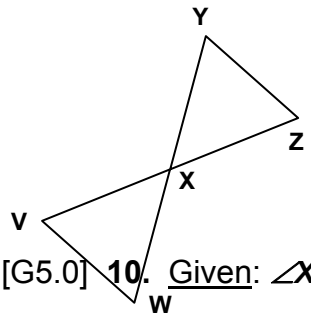
[G12.0] **8.** Solve for **x**:

x

Please continue ☞

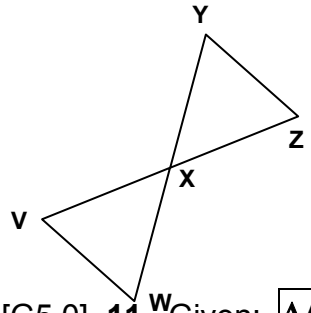


[G5.0] **9.** Given: $\overline{WY}$ **bisects** $\overline{VZ}$ at point ***X;***
$\angle XWV \cong \angle XYZ$



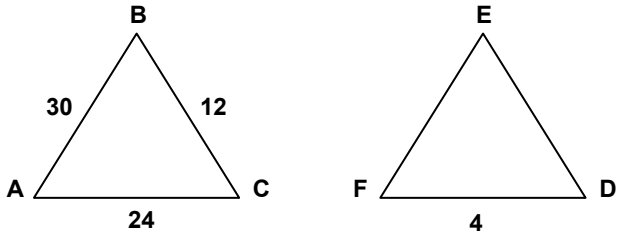
Which congruence rule (SSS, SAS, ASA, AAS, or HL) can be used to prove **ΔXWV ≅ ΔXYZ**?

[G5.0] **10.** Given: $\angle XVW \cong \angle XZY$



Which similarity rule (SSS, SAS, or AA) can be used to prove **ΔXWV ~ ΔXYZ**?

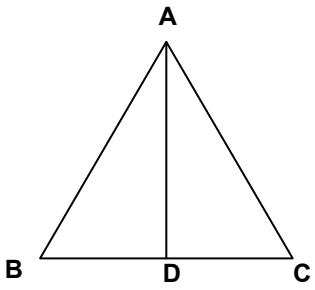
[G5.0] **11.** Given: **ΔABC ~ ΔDEF**



Find: **DE** and **EF** (Be very careful!!!)

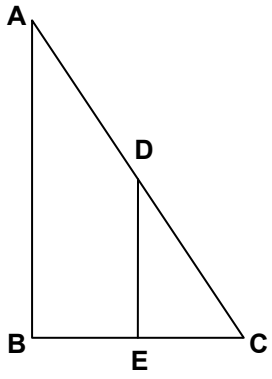
[G5.0] **12. Given:** $\overline{AB} \cong \overline{AC}$ and
$\angle BAD \cong \angle CAD$

Please continue ☞



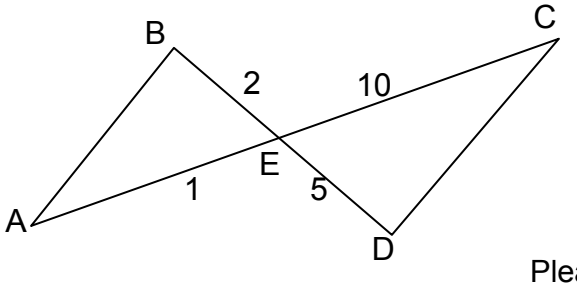
Label the congruent triangle parts on the figure. What **congruence theorem** (SSS, SAS, ASA, AAS, or HL) can be used to prove **Δ XYW ≅ Δ ZYW**?

[G4.0] **13.** What would be sufficient about one pair of segments below to prove ΔABC ~ ΔDEC?



[G4.0] **14.** If ΔABC and ΔDEF are two triangles such that $\frac{BC}{EC} = \frac{AC}{DF}$,
Which pair of congruent ***angles*** would be sufficient to prove the triangles are similar? (**Hint**: Draw and label a pair of triangles!)

[G5.0] **15.** Given: Using the given information, state the similarity between the two triangles.



Please continue ☞

a) $\Delta ABE \cong \Delta DCE$
b) $\Delta ABE \cong \Delta ECD$
c) $\Delta ABE \cong \Delta CDE$
d) $\Delta ABE \cong \Delta BDC$

[G5.0] **16.** If Δ**DEF** and Δ**MNO** are two acute triangles such that **EF** $\cong$ **NO** and $\angle$**D** $\cong$ $\angle$**M**, which of the following would be sufficient to prove the triangles are congruent? (**Hint**: Draw the triangles and label the corresponding segments!)

a) $DE \cong MN$
b) $DF \cong MO$
c) $\angle F \cong \angle O$
d) $\angle E \cong \angle N$

[G6.0] **17.** Given: ΔABC is a **scalene** triangle.

If we **assume** that m$\angle$A = m$\angle$C, then AB = BC by the definition of isosceles. However, this would **contradict** our given statement that the triangle IS SCALENE. So, what can we conclude about the measurement of angles A and C?

We call this "**Proof By Contradiction**".

[G12.0] **18.** What is the sum of the interior angles of a convex hexagon?

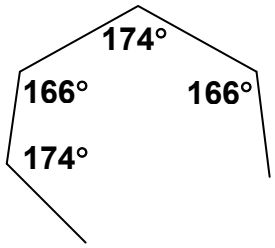
[G12.0] **19.** A convex hexagon has exterior angles of **63°, 61°, 64°, 60°, and 62°**. What is the measure of the last exterior angle?

[G12.0] **20.** Find the number of sides (N) in a regular convex polygon with interior angles measuring **160°**?

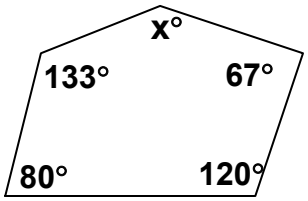
Please continue ☞

[G12.0] **21.** Find the number of sides (N) in a regular convex polygon with exterior angles measuring **120°**?

[G12.0] **22.** Part of a convex polygon is shown. Given the same pattern continues, find the number of sides (N)?

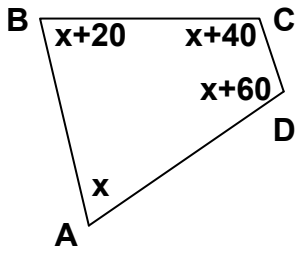


[G12.0] **23.** Find the measure of ∠**x**. Also, how much is the exterior angle paired with ∠x?



[G12.0] **24.** Find the measure of ∠**C**.

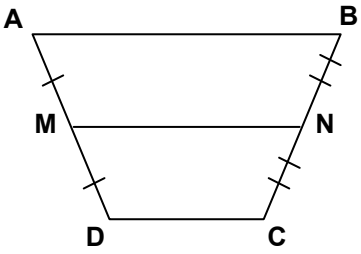
Please continue ☞



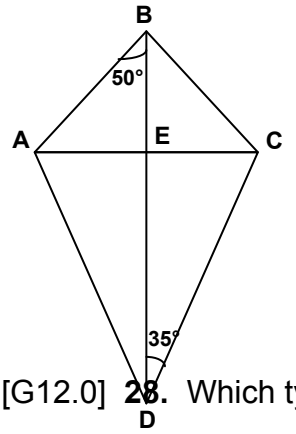
[G12.0] **25.** The sum of the interior angles of a convex polygon is ***equal to*** the sum of the exterior angles. What type of polygon is it?

(Hint: You already know one of these values…!)

[G12.0] **26.** Let **AB = 5x + 7** and
CD = 2x + 3 and
MN = 40
Find **x**.



[G12.0] **27.** ABCD is a **kite**.
Find **m∠BCD**.



Hint: What do you know about the diagonals and angles of kites?

[G12.0] **28.** Which types of quadrilaterals have each of the following features?

Please continue ☞

a. Only one pair of opposite sides are parallel.

_____

b. The diagonals are congruent.

_____

_____

_____

c. The diagonals are perpendicular.

_____

_____

d. The diagonals bisect both opposite pairs of interior angles.

_____

_____

e. The consecutive sides are congruent, but the opposite sides are not.

_____

[G1.0] **29.** Given two numbers **2** and **18**.

a. Find the arithmetic mean ("average").

b. Find the geometric mean.

c. Which value is greater?.

[G15.0] **30.** Which of the following are Pythagorean Triples?

a. 5, 12, 13

b. 8, 9, 13

Please continue ☞

c. 7, 24, 25

[G15.0] **31.** Identify whether each triangle is <u>acute, right, or obtuse</u>? Be careful…

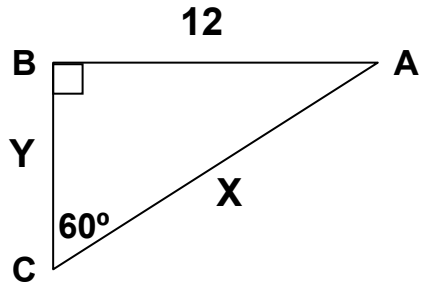
a. 10, 12, 16

b. 10, 6, 8

c. 8, 12, 13

d. $\sqrt{22}, \sqrt{27}, 7$

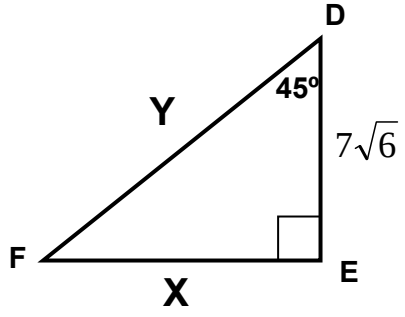
[G20.0] **32.** Find <u>x</u> and <u>y</u> below.



X =

Y =

[G20.0] **33.** Find **<u>X</u>** and **<u>Y</u>** below.



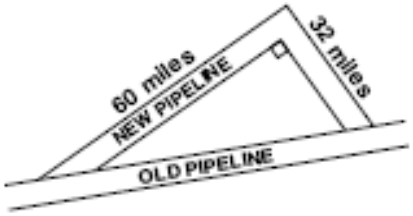
Please continue ☞

X =

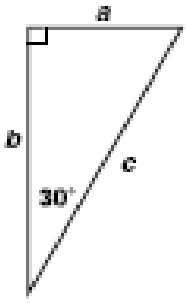
Y =

[G15.0] **34.** A right triangle's hypotenuse has length **8**. If one leg has length **4**, what is the length of the other leg?

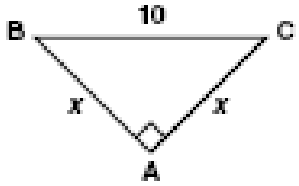
[G15.0] **35.** A new pipeline is being constructed to re-route its oil flow around the exterior of a national wildlife preserve. How much farther will the oil have to flow?



[G20.0] **36.** If **a = 5√3**, what is the value of **b**?

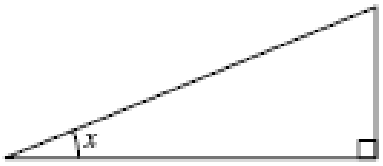


[G20.0] **37.** What is the value of **x** in the triangle below? (Hint: What is the **m∠B** and **m∠C**?)

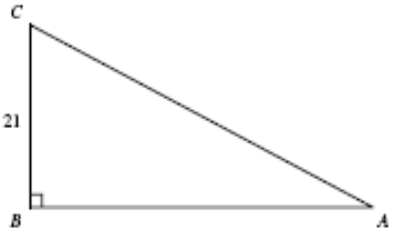


[G19.0] **38.** In the figure below, if **sin x =** $\frac{6}{10}$, what are **cos x** and **tan x**?

Please continue ☞

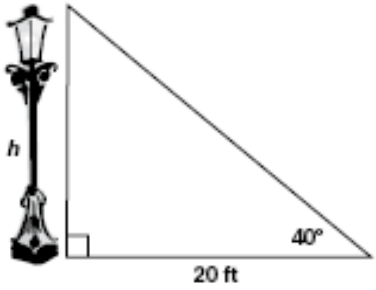


[G19.0] **39.** In the figure below, **sin A = 0.3**.

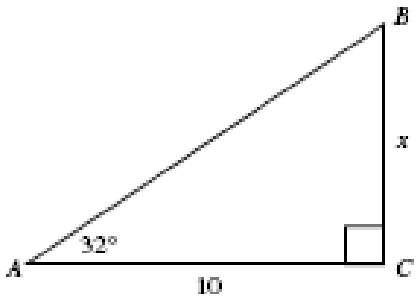


What is the length of $\overline{AC}$?

[G19.0] **40.** Approximately how many feet tall is the streetlight?



[G19.0] **41.** **Which equation** could be used to find x in ΔABC?



A) x =10 sin 32°

B) x =10 cos 32°

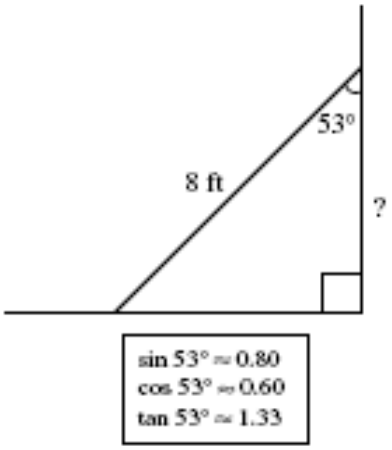
C) x =10 tan 32°

D) $x = \frac{10}{\sin 32}$

E) $x = \frac{10}{\cos 32}$

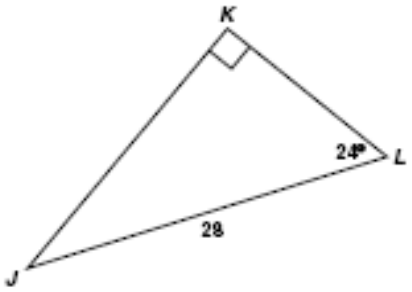
F) $x = \frac{10}{\tan 32}$

[G19.0] **42.** The diagram shows an 8-foot ladder leaning against a wall. The ladder makes a 53° angle with the wall. How far up the wall does the ladder reach?



[G19.0] **43.** Approximately how many feet tall is the streetlight?

Please continue ☞



Which equation should be used to find the length of $\overline{JK}$?

A $\sin 24^\circ = \frac{JK}{28}$

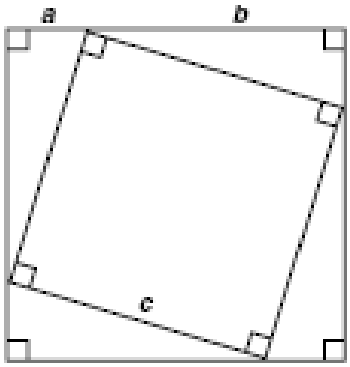
B $\sin 24^\circ = \frac{28}{JK}$

C $\cos 24^\circ = \frac{JK}{28}$

D $\cos 24^\circ = \frac{28}{JK}$

[G14.0] **44.** Think about the proof of the Pythagorean Theorem.

A diagram from a proof of the Pythagorean theorem is pictured below.



Which statement would *not* be used in the proof of the Pythagorean theorem?

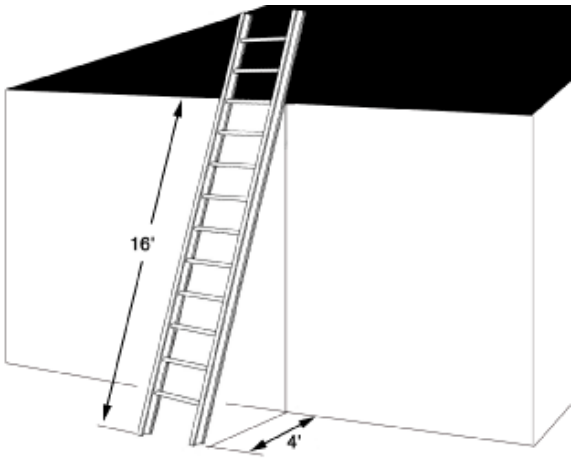
A The area of a triangle equals $\frac{1}{2}ab$.

B The four right triangles are congruent.

C The area of the inner square is equal to half of the area of the larger square.

D The area of the larger square is equal to the sum of the areas of the smaller square and the four congruent triangles.

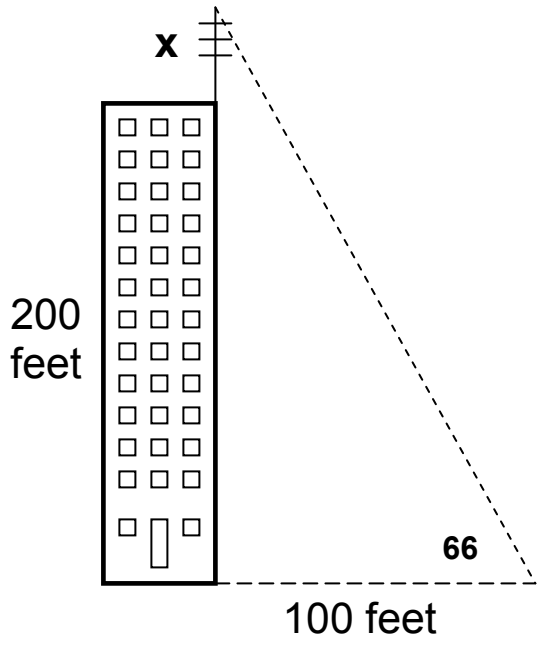
[G19.0] **45.** In the figure below, the base of a **16 foot ladder** is **4 feet from the wall**. What is the measure of the **angle between the ladder and the ground**.



[G18.0] **46.** If **sin x = 0.5**, then find **$\cos^2 x$**.

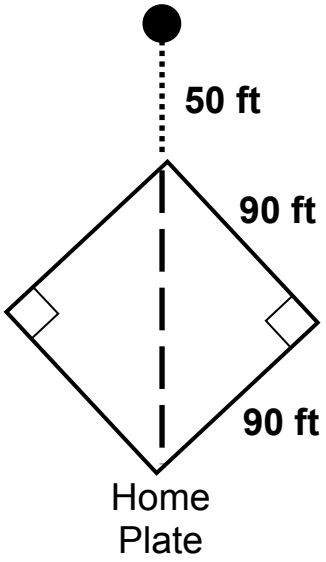
[G18.0] **47.** If **sin x = 0.8** and **cos x = 0.6**, then find **tan x**.

[G19.0] **48.** An antenna is located at the top of a **200 foot tall building**. At a spot **100 feet away** from the building, the angle from the ground to the top of the antenna is **66°**. **How tall is the antenna (x)**?



[G20.0] **49.** A standard baseball diamond is displayed below. If the center fielder gets the ball 50 feet from second base, how far does he have to throw to reach home plate?

Please continue ☞

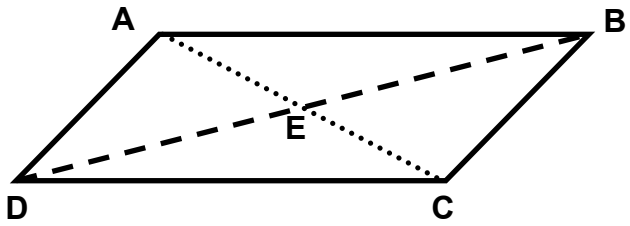


Please leave your answer in **radical form**.

(Hint: What kind of special triangle is involved in this problem?)

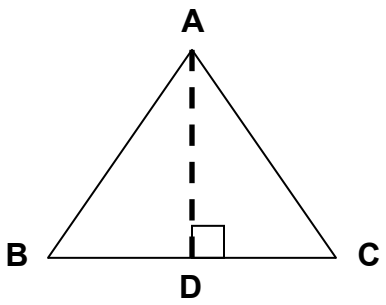
[G12.0] **50.** Parallelogram ABCD is shown below. Given the following, find **AC** and **BD**.

AE = 4x – 4 **BE = 6x – 2**
CE = x + 8 **DE = 3x + 10**

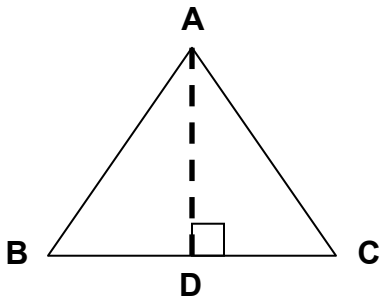


[G20.0] **51.** Given **equilateral** triangle ABC with sides of length **12**, find the altitude (in radical form).

Please continue ☞



[G20.0] **52.** Given **equilateral** triangle ABC with an altitude equal to **15**, find length of side AC (in radical form).



[GE.0] **53.** Do you **understand** each of the previous review problems and have you put forth your **best effort** to prepare yourself for this bench mark exam? If not, call a friend or come see your teacher for some extra tutorial help – **prepare yourself for success!**

Be honest with yourself – it's your grade!

Please continue ☞