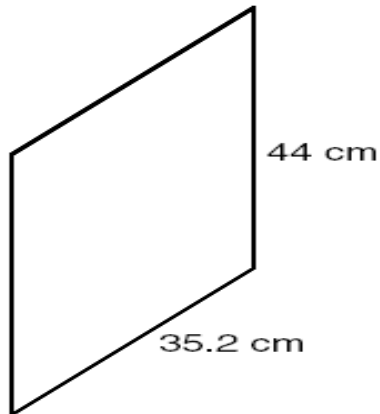# RATIO TAKS

NAME and CLASS PERIOD _____

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**1.**

A certain parallelogram has the dimensions shown.

44 cm

35.2 cm

Which set of dimensions would produce a similar figure?

**F**   17.6 cm, 88 cm

**G**   70.4 cm, 176 cm

**H**   105.6 cm, 132 cm

**J**   140.8 cm, 220 cm

Similar?  Look at a ratio between the sides of the drawing.  Calculate the ratio of the sides of the given answers.  Make sure you are consistent in your ratio:  long:short or long/short.  You will divide the fraction and come up with a decimal number to compare:

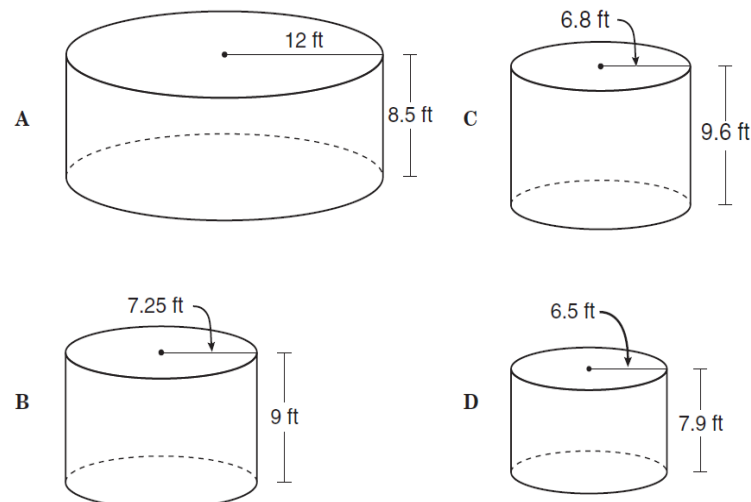Ratio of the picture: $\frac{l}{s} =$

$\frac{44}{35.2} =$ _____

Answer F:_____

Answer G:_____

Answer H:_____

Answer JF:_____

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**2.**

Look at the cylinder shown below.

4.25 ft

6 ft
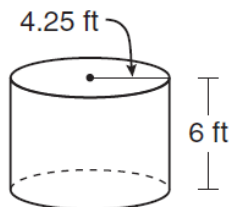
Which of the following cylinders is similar to the one above?

**A**   12 ft   8.5 ft

**C**   6.8 ft   9.6 ft

**B**   7.25 ft   9 ft

**D**   6.5 ft   7.9 ft

Same process.  Your ratio will be:
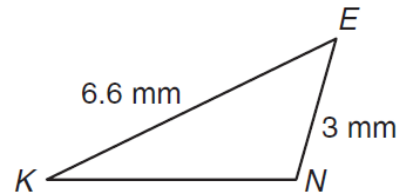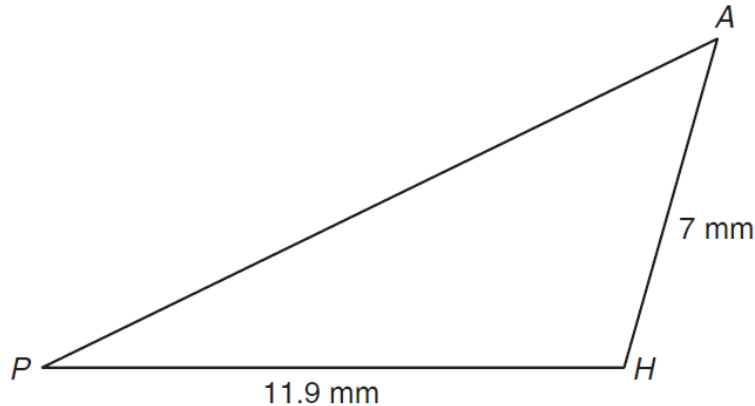
$$\frac{radius}{height}$$

Show your work:

SCALE FACTORS

3. This one has been on the TAKS test many times.

**20** $\triangle AHP \sim \triangle ENK$ as shown below.



Which scale factor was used to transform $\triangle AHP$ to $\triangle ENK$?

**F** $\dfrac{10}{17}$

**G** $\dfrac{3}{7}$

**H** $\dfrac{11}{20}$

**J** $\dfrac{1}{4}$

Note these scale factors are ratios!  We also can look at this as an algebra problem. The sides AH and EN are corresponding sides and we have the measurement for both.  So, 7 times what (x) equals 3?
Write this in equation form:_____

Now solve for our variable x:  _____-   This is a ratio and the scale factor!!

| | |
|---|---|
| 4. | |
| **1** A manufacturing company that makes semiconductors produced about 500 wafers of gallium nitride. The company found that 60 of the wafers contained defects and could not be used. Based on this information, which is the best prediction of the number of defective wafers produced when this company manufactures 8000 wafers? | This is a very basic level for the exit TAKS. |
| | Set up your ratios---proportion |
| **A**  133 | $\dfrac{wafer}{defect} = \dfrac{wafer}{defect}$ |
| **B**  500 | |
| **C**  960 | |
| **D**  367 | |

**5.**

Kate has 2 similar triangular pieces of paper, as shown below.
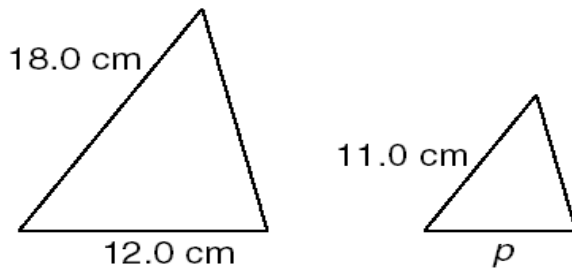


Using the dimensions given, find the approximate length of the side labeled $p$.

**F**  2.4 centimeters

**G**  7.3 centimeters

**H**  16.5 centimeters

**J**  19.6 centimeters

Build a ratio.  Remember a ratio is a comparison by division.

The larger triangle has 2 sides given, so we can develop a ratio by comparing one side to another.

It does not matter whether you compare long to short $\left(\frac{18}{12}\right)$ or short to long $\left(\frac{12}{18}\right)$, just be consistent!

Create a comparison of the ratios of the big triangle to the small triangle, that is make a proportion.

**6.**

The scale factor of two similar polygons is 2:3. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?

**A**  100 cm

**B**  75 cm

**C**  50 cm

**D**  150 cm

What two things are we comparing:

_____ and _____

Set up a ratio with labels. Cross multiply and solve

IMPORTANT:  YOU HAVE TO COMPARE APPLES TO APPLES FOR THIS TO WORK!
RATIO WORDS:  similar       blueprint      proportionate      relation       scale
                      varies directly

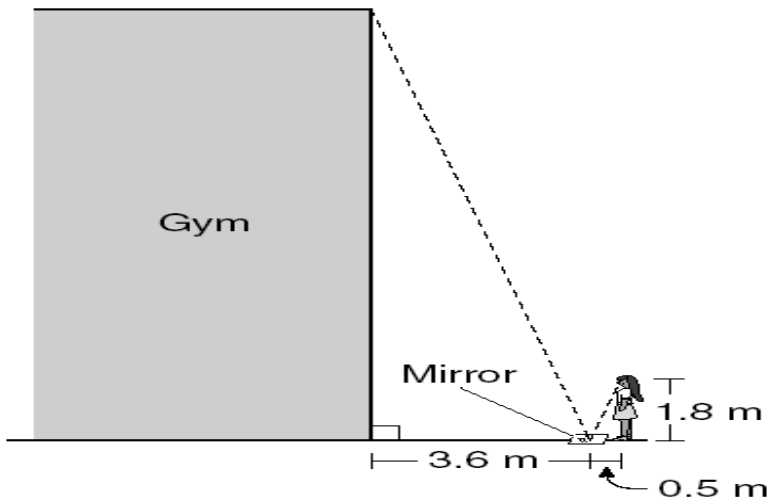| 7. | |
|---|---|
| An archaeologist is making a scale drawing of the foundation of an ancient building. The foundation is a rectangle that measures 18 feet by 45 feet. If the shorter dimension of the drawing is 4 inches, what is the longer dimension in inches?<br><br>Record your answer and fill in the bubbles. Be sure to use the correct place value. | Make your ratio, label, cross multiply, and solve. |
| 8. | |
| To estimate the height of her school's gym, Nicole sights the top of the gym wall in a mirror that she has placed on the ground. The mirror is 3.6 meters from the base of the gym wall.<br><br>**Gym**<br><br>Mirror   1.8 m<br>⊢ 3.6 m ⊣   0.5 m<br><br>Nicole is standing 0.5 meter from the mirror, and her height is about 1.8 meters. What is the height of the gym wall?<br><br>**F**   1 m<br><br>**G**   5.9 m<br><br>**H**   7.2 m<br><br>**J**   12.96 m | This is just a comparison of 2 triangles.  Ground to ground and height to height.<br><br>Make your ratio, label, cross multiply, and solve. |

**9.**

The manager of a video store surveyed a group of customers, asking them the type of movie they were most likely to rent in the future.

| Type of Movie | Number |
|---|---|
| Comedy | 12 |
| Drama | 20 |
| Action | 18 |

Based on this survey, how many action movies can the store expect to be rented on a day when 425 movies are checked out?

A  139

B  153

C  201

D  360

This may not look like a ratio problem, but it is.  What are we comparing? _____ and_____

**10.**

Troy used chalk to outline a triangular plot of land in his backyard. The plot of land has a perimeter of 26 feet, with its longest side measuring 8 feet 10 inches. Troy wants to outline a second triangular plot of land similar to the first but with a perimeter of 42 feet. Which of these is closest to the measure of the longest side of the second triangular plot of land?

F    17 ft 2 in.

G    13 ft 1 in.

H    14 ft 3 in.

J    17 ft 11 in.

You must either change 8feet 10 inches to feet or 26 and 42 feet to inches. Be careful. 8 feet 10 inches is NOT 8.10. Why?_____

**11.**

The manager of the Sherbet Shoppe wants to construct a circle graph showing the popularity of the various sherbet flavors he offers. Here is the tally of the favorite flavors of his first 30 customers on Saturday.

### Favorite Sherbet Flavors

| Pineapple | THL I |
| Lime | IIII |
| Lemon | THL I |
| Raspberry | IIII |
| Orange | THL THL |

In the circle graph, which proportion can be used to find the number of degrees in the sector for orange sherbet?

A  $\frac{10}{20} = \frac{x}{180}$

B  $\frac{10}{30} = \frac{x}{180}$

C  $\frac{10}{20} = \frac{x}{360}$

D  $\frac{10}{30} = \frac{x}{360}$

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How many degrees in a circle?_____   How many customers?_____
How many customers bought orange?_____
So: What would 20 have to do with anything??

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**12.**

A.  If x and y vary directly, and x = 18 when y = 24.  What is x when y is 12?

 B. If x and y vary directly, and x = 3.2 when y = 8.4.  What is x when y is 6.5
Round to HUNDRETHS PLACE!!!!!!

_____

C.   If x and y vary directly, and x = 6 when y =8.  What is y when x is 5?
if?  Round to HUNDRETHS PLACE!!!!!!

_____

Show work:

**13.**

The ratio of juniors to seniors enrolled in technology classes is 9 to 8. If the total number of juniors and seniors enrolled in these classes is 51, which of these best represents the percent of students enrolled in technology classes who are seniors?

A   27%

B   24%

C   53%

D   47%

Multi-steps with a GOTCHA!  What does 9 to 8 mean? _____
What two things are we comparing?
_____ and the total students.
So, what is the minimum number of students we are talking about to get a ratio of 9 juniors for every 8 seniors?_____

| juniors | seniors | total Jr. & Sr. |
|---------|---------|-----------------|
| 9 | 8 | _____ |
| j | s | 51 |

Make a ratio, cross multiply and solve
**for the number of seniors.**

Now use the formula:
_____=_____X_____
#seniors=percent  of  total

Answer?_____
*************
Use logic!
The ratio 9 to 8 is pretty close ot a 50/50 ratio.  So, Is 24 to 76 or 27 to 73 close to 50/50?

So it is either 53% or 47%.  Are the seniors a bigger or smaller group?
_____

**14.**

Olga plans to take a trip from her house in San Marcos, Texas, to a friend's house in Zapata, Texas. She measured the distance between the two places on a map and found it to be 8 inches. If the scale on the map is $\frac{1}{2}$ inch represents 14 miles, which is closest to the actual distance in miles between the two places?

F   112 mi

G   224 mi

H   56 mi

J   44 mi

Make your ratio, label, cross multiply, and solve.