Reinforcement Worksheet (2019-20)
Mathematics
Class 8

Name: _____Date:_____ Section: _____

TOPIC: COMMISSION AND TAX

Q) Rani purchases a pair of shoes whose sale price is Rs. 175. If she pays VAT at the rate of 7%, how much amount does she pay as VAT? Also, find the net value of the pair of shoes.

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Q) The cost of furniture inclusive of VAT is Rs. 7150. If the rate of VAT is 10%, find the original cost of the furniture.

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Q) A refrigerator is available for Rs. 13750 including VAT. If the rate of VAT is 10%, find the original cost of the refrigerator.

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Q) A colour T.V. is available for Rs. 13440 inclusive of VAT. If the original cost of TV is Rs. 12000, find the rate of VAT.

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Q) Maria makes money by commission rates. She gets 15% of everything she sells. If Maria sold $23000 worth of items this month, what is her salary for the month?

Q) Tiffany makes money by commission rates. She gets 21% of everything she sells. If Tiffany sold $27000 worth of items this month, what is her salary for the month?

Q) William earns commission as a real-estate agent. Last month his total sales were $971,100. If William earns a 3% rate of commission, what was his gross income last month?

Q) Alia is selling collections of art and makes a 12% commission on all sales. What would her commission be on the sale of a $3250 collection of art?

Q) A real estate agent earned a commission of $6875 for selling a house. If his rate is 2.5%, find the selling price of the house.

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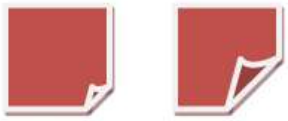
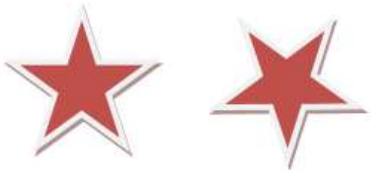
TOPIC: CONGRUENCE AND SIMILARITY

Complete all the problems. Identify the relationship between the shapes and write "C" for congruent or "N" for non congruent.

1. 

2. 

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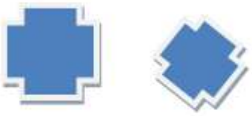
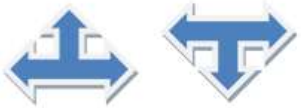
5. 

6. 

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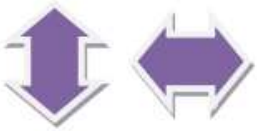
9. 

10.

A) Complete each congruence statement.

1) $\Delta DEF \cong \Delta YXZ$

$\overline{EF} \cong$ _____

2) $\Delta LMN \cong \Delta PQR$

$\angle M \cong$ _____

3) $\Delta ABC \cong \Delta FGH$

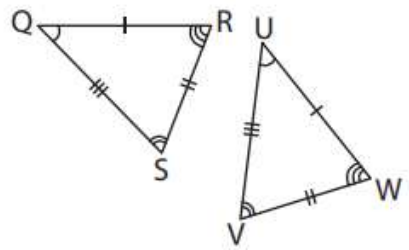
$\angle F \cong$ _____

4) $\Delta STU \cong \Delta XYZ$

$\overline{ST} \cong$ _____

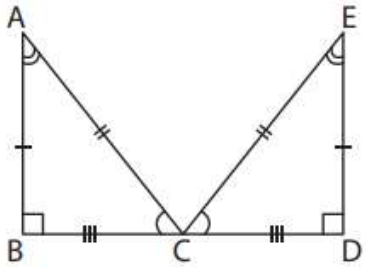
B) Complete each congruence statement.

5)



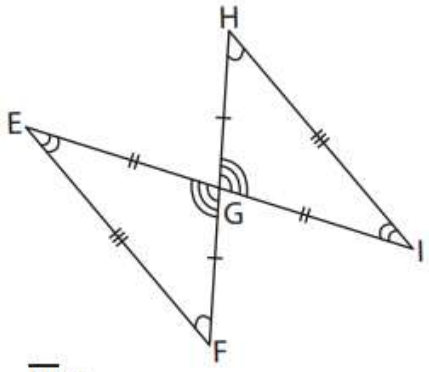
$\angle Q \cong$ _____

6)



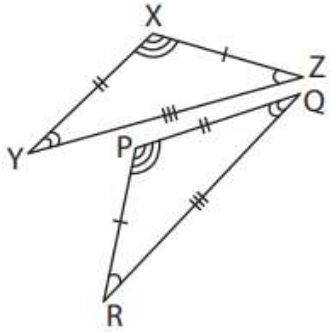
$\overline{AB} \cong$ _____

7)



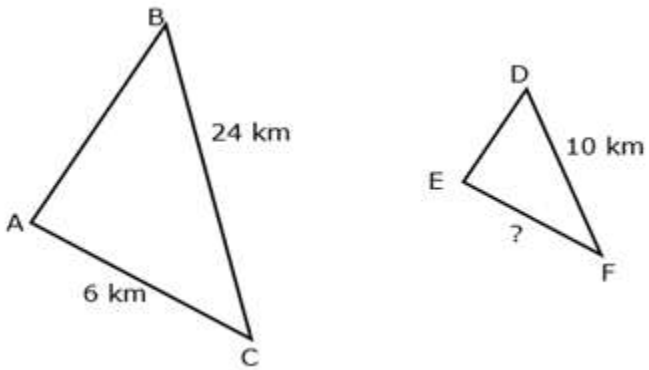
$\overline{HI} \cong$ _____

8)

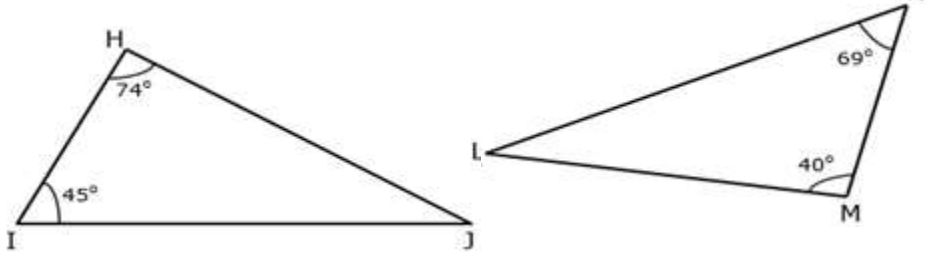


$\angle X \cong$ _____

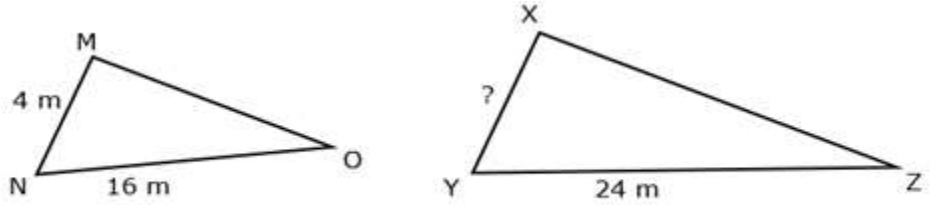
In the given triangles below, $\Delta PQR \sim \Delta STR$. Find the missing length.



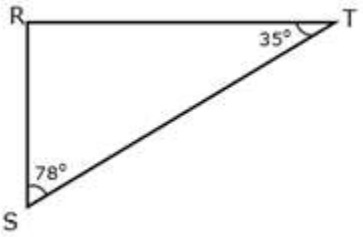
Are these triangles similar?

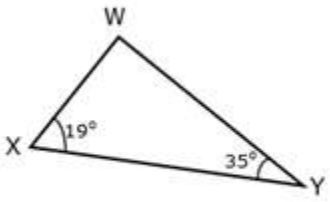


In the given triangles below, ΔMNO ~ ΔXYZ. Find the missing length.



Are these triangles similar?



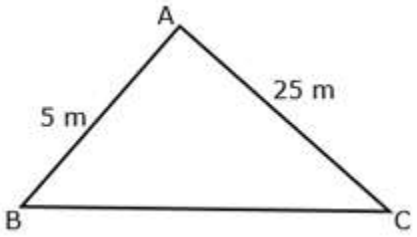


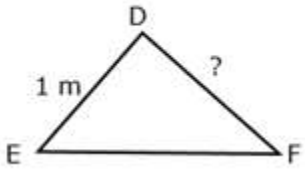
Yes ☐ No ☐

If yes, write a similarity statement.

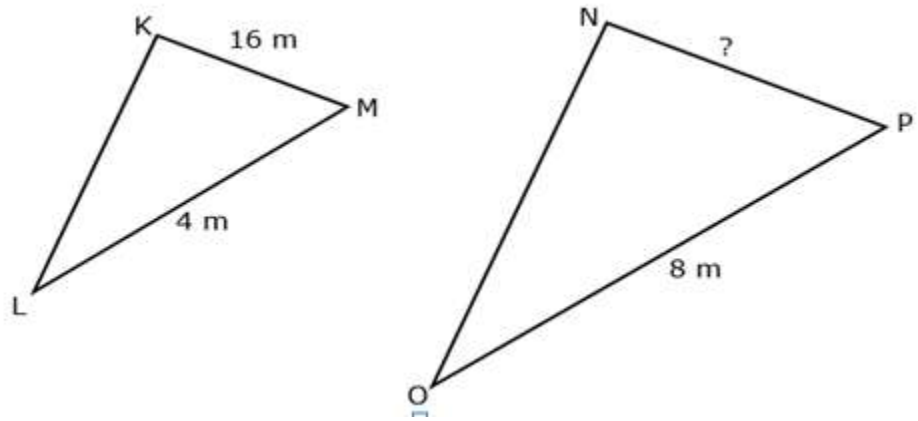
Δ ☐ ~Δ ☐

In the given triangles below, ΔABC ~ ΔDEF. Find the missing length.

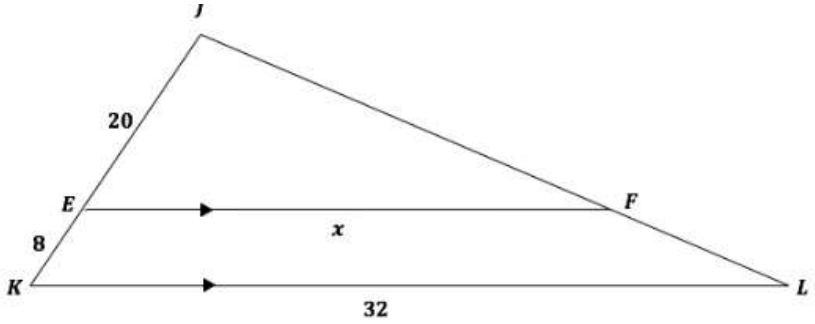




In the given triangles below, ΔKLM ~ Δ XYZ. Find the missing length.



Find the unknown sides of the given similar triangles



TOPIC: APPLICATION OF LAWS OF INDICES

Q) Simplify each of the following;

i) $(8a^3 \div 4a)^4$

vi) $(2\,a^2\,b^3)^4 \div 4\,a^5\,b^2$

ii) $7a^{-4} \times 2a^{-1}$

vi) $8a^{-4} \div 2a^{-6}$

Iii) $3x^4 \times 9x^2\,y \div (3xy)^2$

vii) $2a^4\,b \times 3ab^3 \div 6(ab)^4$

iv) $a^{x+4}\,b^5 \div \frac{a^{x+7}}{(ab)^{-5}}$

viii) $(4x^2y)^3 \div 64x^2\,y^5$

Q) Evaluate each of the following;

i) $\left(\frac{2}{3}\right)^{-2}$

iv) $45^2 \times 7^2 \div \left(\frac{1}{2}\right)^{-1}$

ii) $\left(\frac{2}{3}\right)^{-1} \times \left(3\frac{3}{8}\right)^{-2}$

v) $\left(\frac{3}{5}\right) \times \left(\frac{7}{9}\right)^0 \div \left(\frac{1}{2}\right)^{-4}$

i) $\left(\frac{3}{4}\right)^{-2} + \left(\frac{1}{3}\right)^2$

vi) $2^{-2} \div 3^{-1} - \left(1\frac{3}{5}\right)^{-1}$

Q) Simplify the following, giving your answer with positive indices;

i) $(2x^{-3})^2 \div (8x^6)^{\frac{1}{3}}$

$\frac{5\,x^3\,y^4}{4\,x\,y^3} \times \frac{(25\,x^4\,y)^{-1}}{(2xy)^{-2}}$

i) $(a^3\ b)^{\frac{1}{2}} \div \left(2\ a^4\ b^{-\frac{1}{2}}\right)^{-2}$ $\qquad$ $\dfrac{(a\ b^2)^{-10}\ (2\ a\ b^{-4})^{-2}}{(4\ a\ b\ c)^3\ \ (8\ a\ c^3\ )^{-1}}$

Q) Solve and express your answer in radical form:

$$(x^3y^4)^{\frac{1}{6}} \ \div \ x^{\frac{1}{4}}y^{\frac{1}{3}}$$

Q2: Simplify the following, expressing your answer in positive index form: $\dfrac{(a^{-5}b^3)^4}{ab^{-4}}$

Q) Simplify:

(i) $p^{\frac{1}{2}} \div p^{-1\frac{1}{2}}$

(ii) $(2x^3y^{\frac{1}{2}})^3 \div 4x^2y^{\frac{1}{2}}$

_____

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(iii) $\frac{16\,y^4}{(2\sqrt{y})^4}$

_____

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OBJECTIVES

Q) Encircle the correct answer.

a) If $300 is invested at 5% for 3 years, the simple interest would be:

(i) $ 15 (ii) $ 45 (iii) $ 1500 (iv) $ 90

b) If $ 4,000 at 3% simple interest for 4 years, the final balance would be:

(i) $ 4480.00 (ii) $4,000.00 (iii) $ 4,400.00 (iv) None of the above

c) The cost price of the camera is $ 250 and the selling price is $ 288. The profit will be

(i) $ 88 (ii) $ 25 (iii) $ 50 (iv) $ 38

d) $\frac{200}{500}$ represented as percentage is _____

(i) 29% (ii) 94% (iii) 40% (iv) 60%

e) $5^0 + 5$

(i) 5 (ii) 6 (iii) 10 (iv) 25

f) Simplified form of $(-2x^2)^3$

(i) $8x^5$ (ii) $6x^6$ (iii) $-8x^6$ (iv) $-8x^8$

g) 2^{-3} in a fraction form

(i) $\frac{1}{2}$ (ii) $\frac{1}{4}$ (iii) $\frac{1}{8}$ (iv) $\frac{1}{16}$

h) The exact value of 7^0

(i) 0 (ii) 1 (iii) 7 (iv) $\frac{1}{7}$

i) Simplified form of $(3x^2)^5$

(i) $243x^{10}$ (ii) $243x^{25}$ (iii) $24x^{25}$ (iv) $15x^{10}$

j) Simplified $25^2 \div 5^4$

(i) 5^2 (ii) 5^6 (iii) 1 (iv) 5^3

.

k) Simplify $2^{10} \times 3^{10}$

(i) 5^{10} (ii) 5^{20} (iii) 6^{10} (iv) 6^{100}

l) The value of 3^2 is same as

(i) 3 x 2 (ii) $\sqrt[3]{3 \times 3 \times 3}$ (iii) $\sqrt{81}$ (iv) $\sqrt{3}$ x

m) A shopkeeper earned a profit of $30 on the cost of $600. The percentage profit is_____

(i) 6% (ii) 5% (iii) 3% (iv) 18%

n) 0.00037560 in standard form is _____

(i) 3.7560×10^{-4} (ii) 3.756×10^3 (iii) 3.7560×10^4 (iv) 3.756×10^{-3}

o) The y – intercept of the line y = 2x + 5 is

(i) 5 (ii) 2 (iii) -5 (iv) -2

p) $(5^2)^3$ is equal to

(i) 5^6 (ii) 25^6 (iii) 5^5

q) In ordinary notation the value of 4.1×10^4

(i) 410000 (ii) 0.4100 (iii) 0.00041

r) $\frac{15x^3y}{9\,x\,y^2}$ simplified in the simplest form.

(i) $\frac{y^2}{x^2}$ (ii) $\frac{5x^2}{3y}$ (iii) $\frac{16x^3}{9}$

s) In standard form the value of 500 × 90000 is

(i) 4.5×10^{-6} (ii) 4.5×10^{5} (iii) 4.5×10^{6} (iv) 4.5×10^{4}

t) Identify the point which does not lie on the line y = 7

(i) (0, 7) (ii) (-3, 7) (iii) (7, 0) (iv) (3, 7)

u) Simplified form of $63\,x^3y^5 \div 7\,x^2y^2$ is

(i) $9\,x^{-1}y^{-2}$ (ii) $9\,x^5y^7$ (iii) $9\,xy^3$ (iv) $9\,xy^2$

v) The volume of a cuboid is _____ when its length is 5 cm, width is 2 cm and height is 3 cm.

(i) 30 cm (ii) 30 cm^2 (iii) 30 cm^3 (iv) 150 cm^3 .

w) A cuboid measures 59.8 cm by 30.2 cm by 10.1 cm, its volume is approximately

(i) 18000 cm^3 (ii) 180 000 cm^3 (iii) 190 000 cm^3 (iv) 190 000 cm^2

x) Express 0.5 m^3 in liters

(i) 5 liters (ii) 500 liters (iii) 0.5 liters (iv) 0.05 liters

y) Gradient of the equation y = - $-\frac{1}{3}$x + 4 is

(i) $-\frac{1}{3}$ (ii) $-\frac{1}{3}$x (iii) -1 (iv) + 4

z) The exact value of 7^0

(i) 0 (ii) 1 (iii) 7 (iv)

TOPIC: PROFIT, LOSS AND DISCOUNT

Q) A shopkeeper sold a pair of shoes for $ 27.He made a loss of 10 %. Calculate the cost price of the shoes.

Q) A television priced at $ 500 is sold for $ 400. Find the percentage discount.

Q) The price of the camera in the sale was $60. Calculate the marked price, if the prices in the sale were reduced by 20%.

Q) In a sale, a shopkeeper reduced the marked price of his goods by 20%. The marked price of a book was $20. Calculate its price in the sale.

Q) A shopkeeper buys a washing machine for $480. Find the sale price for the profit on cost of 5 %.

Q) At what price must an article which cost $450 be sold in order to make a profit of 16 % on cost.

Q) Jamal bought a computer $ 875 and later sold it for $ 735. Work out his percentage loss.

Q) Mr Ali decided to pay a new car costing $ 60000.He paid for his new car in cash and was given a discount. He paid $ 57000 for the car; calculate the percentage discount he received.

Q) The profit made on a certain camera is 30% on the cost price. If the profit is $270, find the selling price of the camera.

Q) A retailer buys a radio for Rs 225. His overhead expenses are Rs 15. If he sells the radio for Rs 300, determine his profit percent.

Q) Find the discount in percent when

(i) M.P. = Rs. 900 and S.P. = Rs. 873	**(ii) M.P. = Rs. 500 and S.P. = Rs. 425**

Q) After allowing a discount of $7\frac{1}{2}$ % on the marked price, an article is sold for Rs. 555. Find it's marked price.

Q) The marked price of a water cooler is $ 4650. The shopkeeper offers an off-season discount of 18% on it. Find its selling price.

Q) The price of a sweater was slashed from $ 960 to $ 816 by a shopkeeper in the winter season. Find the percentage of discount given by him.

Q) After a loss of 8% on a toy, it is sold for $ 216.20. Find the marked price of the toy.

Q) In a sale, a shopkeeper reduced the marked price of his goods by 20 %.

a) The marked price of the book was $20. Calculate its price in the sale.

b) **The price of a camera in the sale was $60. Calculate its marked price.**

TOPIC: SIMPLE INTEREST

Q) Ahmed deposited a sum of money in a saving account at the rate of 5% per annum and earns $120 as a simple interest in 3 years. Find the sum of money received at the end of 3 years.

Q) Susan has to decide between the two investment plans. The details of the two plans are as follows:

PLAN "A"	PLAN "B"
Principal amount = $800	Principal amount = $800
Rate = 6 %	Rate = 3 %
Time = 1 year	Time = 1 year
Interest =?	Interest =?

a) Calculate the interest earned on each investment.

b) Which investment plan is better? Justify your answer

Q) Use simple interest to find the ending balance, if $34100 at 4% for 3 years.

Q) Rohail opened a bank account with $ 800 at the London bank. After a year, the bank paid him the interest and his amount raised to $836. Work out, as a percentage, London Bank's interest rate.

Q) The simple interest on a certain sum of money for 9 months at 4% per annum is $25.20. Find the sum of money.

Q) Find the principle amount of money and time period. If 5% is the Interest rate, simple interest is Rs. 90
and the amount over a period of Time is Rs. 1290.

Q) Find the principle amount and time period if 5% is an interest rate, simple interest is Rs90 and the amount over a period of time is Rs 1290.

Q) A woman borrows $500 for 2 years at a rate of 5% per annum. Calculate the simple interest she has to pay?

Q) $700 is invested at 4% per annum. How long will it take for the amount to reach $784?

Q) Mary needed capital for her bakery. She borrowed $60,000 for 4 years at a simple interest rate of 8% per year.

a) How much interest must be paid?

b) How much money will Mary pay at the end of 4 years?

Q) A bank charges an interest of 12% per annum on all personal loans. If a customer borrows an amount of $285000, how much interest is payable for 5 years?

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Q) A finance company charges 8% per annum simple interest on money lent out to customers. If Rs. 30,000 is borrowed for 5 years, how much interest is payable?

_____

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Q) Asif deposits $650 into a bank paying the simple interest. He leaves the money for 5 years. At the end of 5 years, the amount in the bank is $ 780. Calculate the percentage rate of interest the bank paid per year.

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TOPIC: THE STANDARD FORM

Q) Convert the number as specified,

a) Convert 0.0000000033 to standard form._____

b) Convert 2.76×10^{3} to an ordinary number. _____

c) Convert 0.000391 to standard form. _____

d) Convert 5.34×10^{7} to an ordinary number._____

e) Convert 1.19×10^{10} to an ordinary number._____

f) Convert 6.73×10^{-2} to an ordinary number. _____

g) Convert 2.72×10^{9} to an ordinary number._____

h) Convert 0.00000000603 to standard form._____

i) Convert 53700000 to standard form._____

j) Convert 3.61×10^6 to an ordinary number_____

Q) Calculate (write your answer in standard form)

a) $(7.74 \times 10^{-10}) + (9.29 \times 10^{-8})$

b) $(1.9 \times 10^{3}) + (7.6 \times 10^{5})$

c) $(4.34 \times 10^{4}) - (6.9 \times 10^{3})$

d) $(2.39 \times 10^{-2}) - (4.59 \times 10^{-3})$

d) $(2.4 \times 10^{19}) \div (4 \times 10^{10})$

e) $(1.5 \times 10^{8}) \div (3 \times 10^{4})$

e) $(4 \times 10^{8}) \times (2 \times 10^{9})$

f) $(7 \times 10^{-3}) \times (4 \times 10^{-5})$

Q) If p = $\frac{x-y}{xy}$ x= 8.5×10^9, y = 4×10^8. Find the value of p. Give your answer in standard form.

Q) The table shows the amount of rice grown in some countries in 2002.

	China	Brazil	India	Vietnam
Amount(tonnes)	1.2×10^8	7.6×10^6	8.0×10^7	2.1×10^7

a) Calculate the difference in the amount of rice grown in Brazil and Vietnam. Give your answer in standard form.

b) Calculate the total quantity of rice grown in China and India. Give your answer in standard form.

Q) Given that $x = 5 \times 10^5$, find the value of each of the following, giving your answer in standard form:

a) $5x$ b) x^2

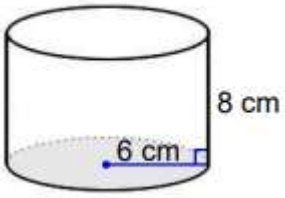
Q) In Australia, the people use approximately 2,240,000,000 pounds of bread in a year. Express the figure in mega pounds, giving the answer in scientific notation?

Q) In August 2001, there were approximately 2 million people living in Apple City. In August 2011, that population grew to 6 million people. How many more people lived in Apple City in 2011 in comparison to 2001? Write your answer in scientific notation.

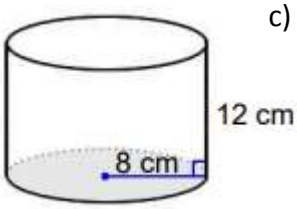
TOPIC: VOLUME AND SURFACE AREA OF CYLINDER

Q) Find the volume and total surface area of cylinder.

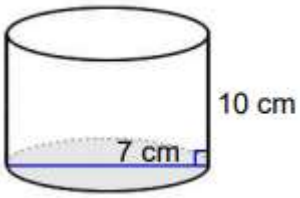
a)



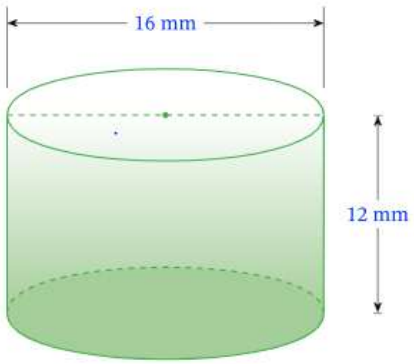
b)



c)



Q) Find, to the nearest tenth, the total surface area of this cylinder.



Q) There are two cylinders. The first is of radius 7 and height 4 and the second is of radius 6 and height 7. Which cylinder has the larger surface area?

A the second cylinder B the first cylinder

Q) Find the surface area of a cylinder whose base is a circle of radius 21 cm and whose height is 9 cm.

Use $\pi = \frac{22}{7}$.

Q) Find the diameter of the base of a cylinder if the surface area is 496π square centimeters and its height is 23 centimeters.

Q) Ahmed and Daniyal were calculating the surface area of a cylinder of height 28 and radius 9. Madison found the surface area to be 180π,and Daniel found it to be 666π.Who is correct?

a) Ahmed
b) Daniyal

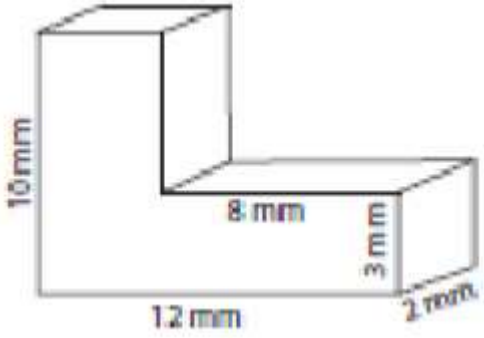
Q) A cylinder has a volume of 997 cm^3 and a height of 2.2 cm. Find the curved surface area of this cylinder to the nearest square centimeter.

Q) A cylinder has a curved surface area of 656 cm^2 and a diameter of 10.2 cm. Find its volume, giving your answer to the nearest cubic centimeter.

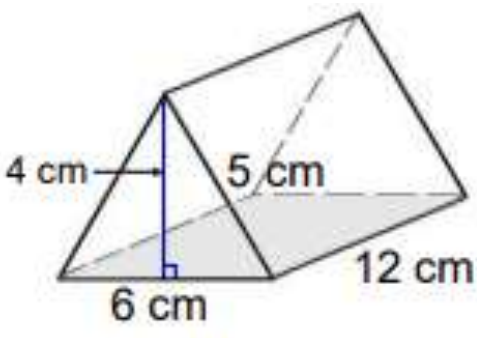
TOPIC: VOLUME AND SURFACE AREA OF PRISM

Q) Find the volume of the given prism:

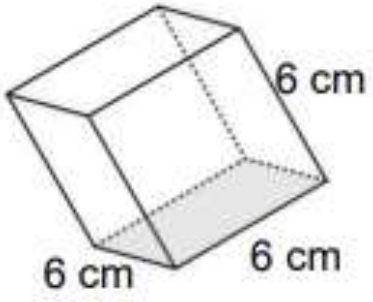
a)



d)



b)



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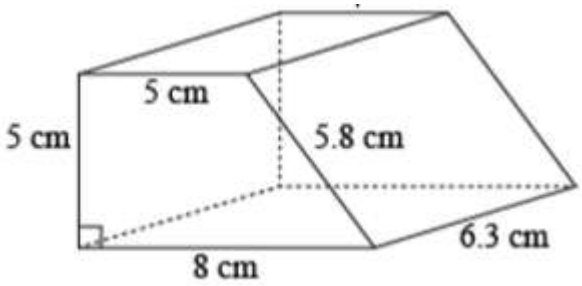
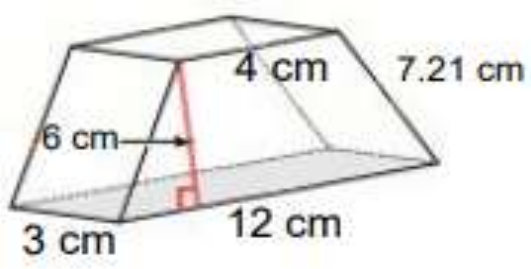
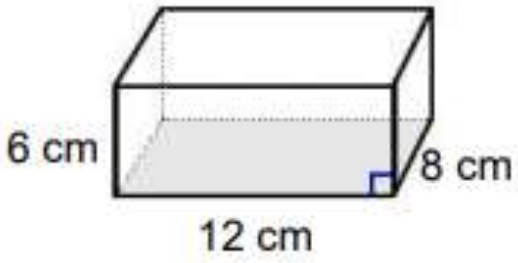


c)

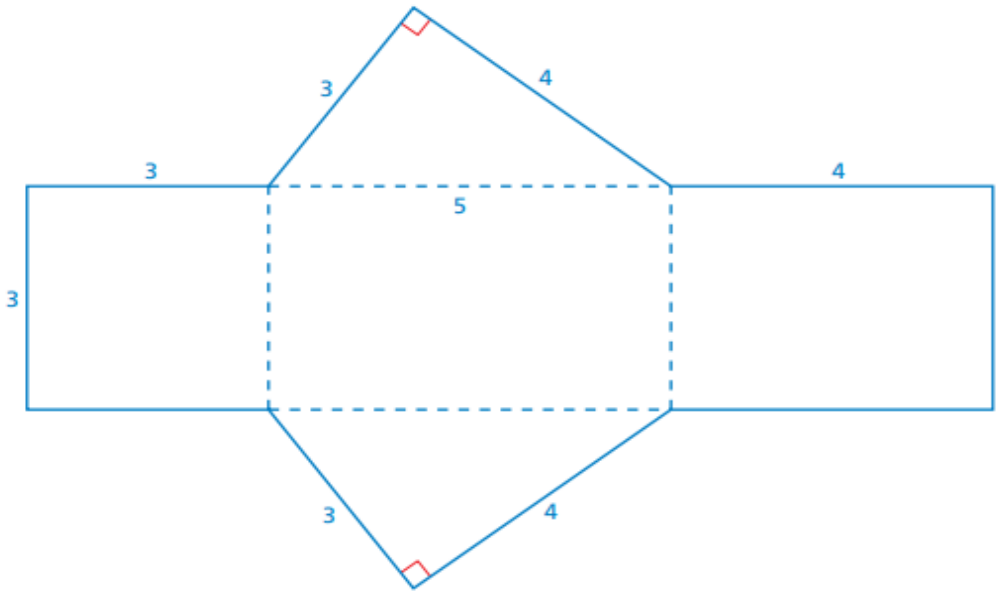


f)

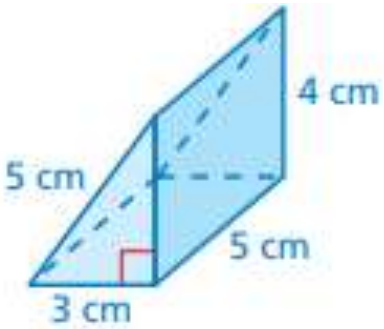


Q) Calculate the surfaec area of prism:

a)

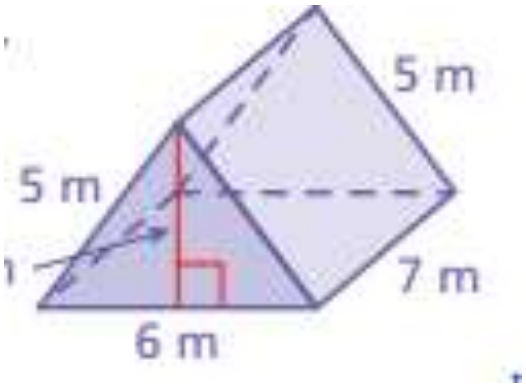


b)

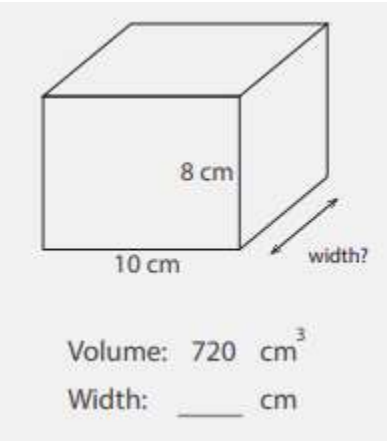


c)

4 m



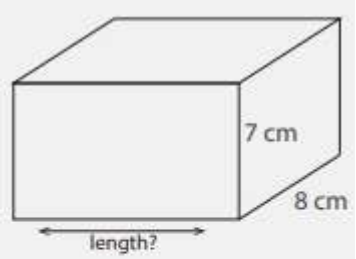
Q) Calculate the width of the given cuboid.



b) Calculate its surfaace area.

Q) Calculate the unknown sideand the surface area of the given cuboid.

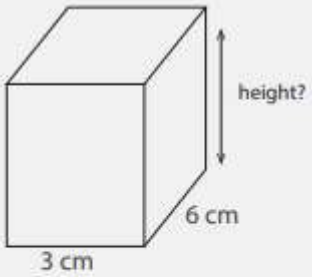
a)



Volume: 560 cm^3

Length: ____ cm

b)



Volume: 180 cm^3

Height: ____ cm

Q) The total surface area of a cube is 216 cm^2. Caculate;

a) The length of each side

b) the volume of a cube

Q) The volume of a cuboid is 200 cm^3.

a) Calculate.its height when the length of a cuboid is 10 cm and breadth is 4 cm.

b) And its surface area

_____

_____

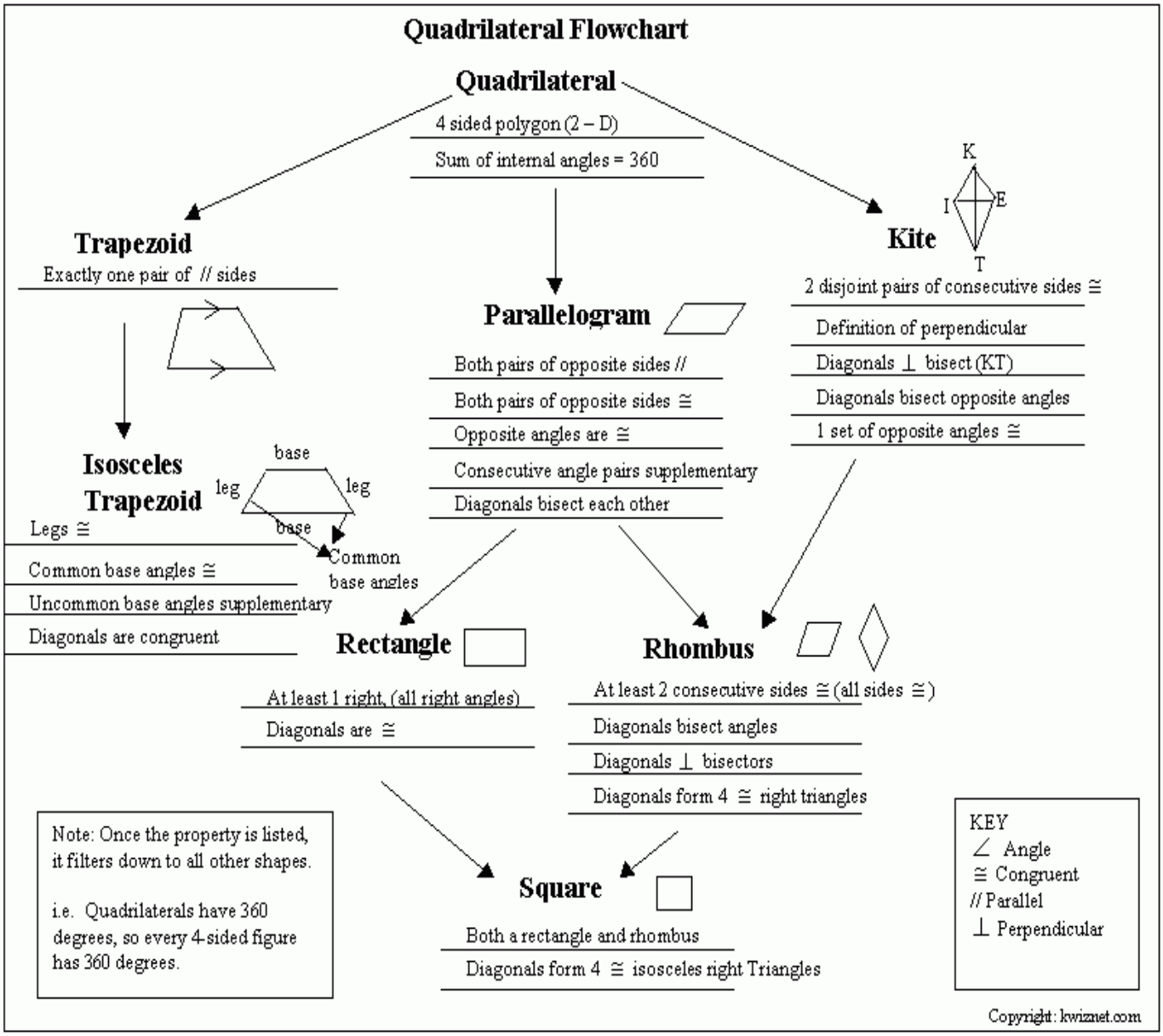
_____

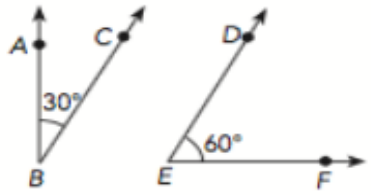
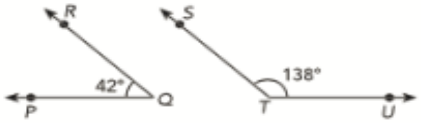
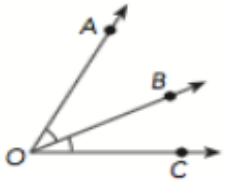
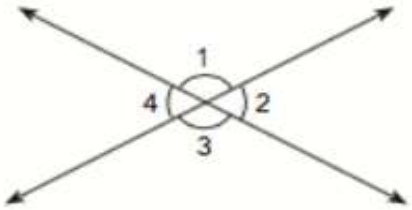
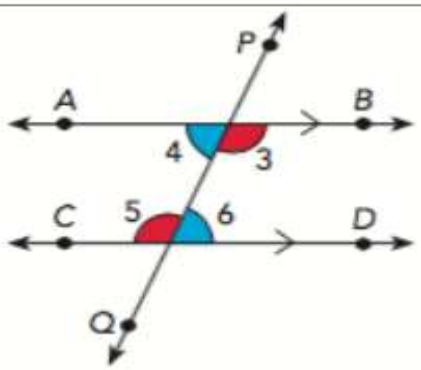
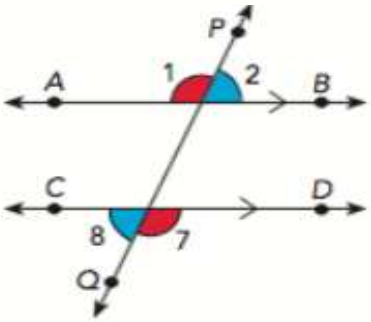
_____

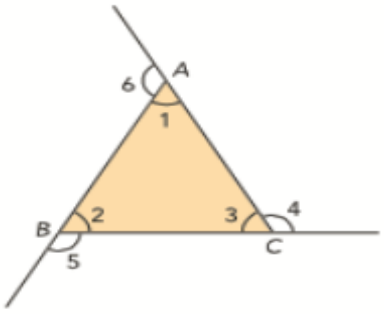
_____

_____

TOPIC: VOLUME AND SURFACE AREA OF CYLINDER

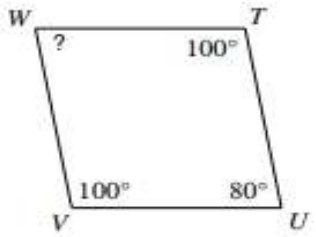


Type of angle	Properties	Example
Complementary Angles	Two angles whose angle measures total 90 degrees.	
Supplementary Angles	Two angles whose measures total 180 degrees.	
Adjacent Angles	When two angles share a side and a vertex but have no common interior points.	
Vertical Angles	When two lines intersect at a point, they form four angles. The nonadjacent angles are vertical angles.	
Alternate Interior Angles	The pairs of angles on **opposite** sides of the transversal for two lines, but **inside** the two lines.	
Alternate Exterior Angles	The pairs of angles on **opposite sides** of the transversal for two lines, but **outside** the two lines.	

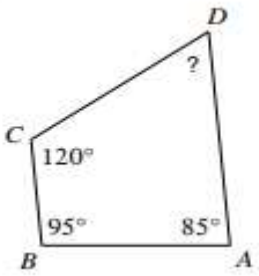
Exterior Angle	Angles formed by one side of a polygon and the extension of an adjacent angle The exterior angle of a triangle is: *~Always supplementary to the interior angle it is adjacent to* *~Always equal to the sum of the other two interior angles of the triangle*	

Q) Find the measure of each angle indicated.

1)



2)



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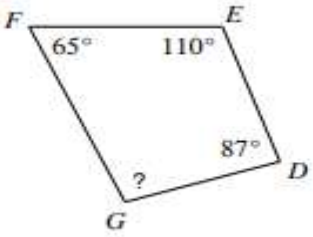

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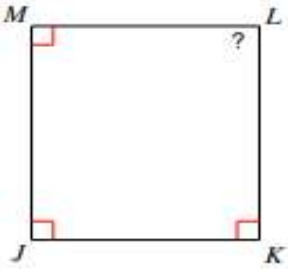

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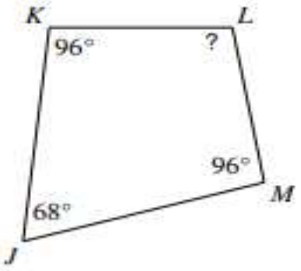
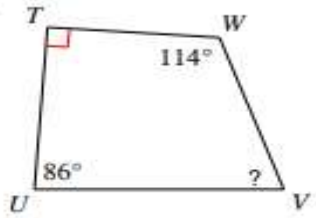
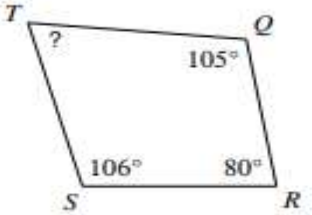

K
L
96°
?
96°
M
68°
J

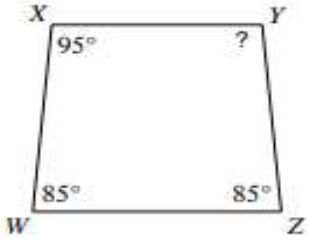
6)


T
W
114°
86°
?
U
V

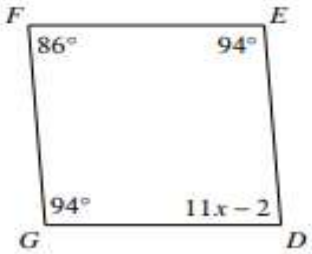
7)


T
Q
?
105°
106°
80°
S
R

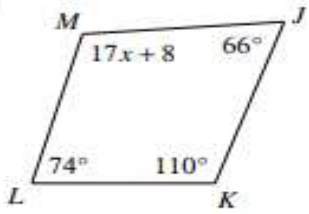
8)


X
Y
95°
?
85°
85°
W
Z

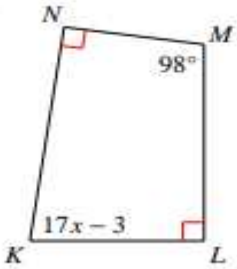
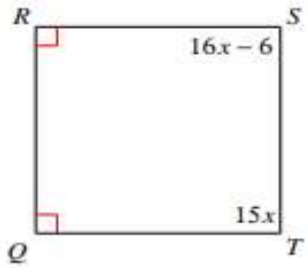
9)


F
E
86°
94°
94°
11x − 2
G
D

10)


M
J
17x + 8
66°
74°
110°
L
K

11)



12)