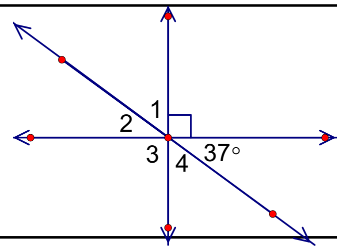
Angles

Find the measures of the angles.

1 __________ = m<1

2 __________ = m<2



3 __________ = m<3

4 __________ = m<4

5 __________ = m<AXB

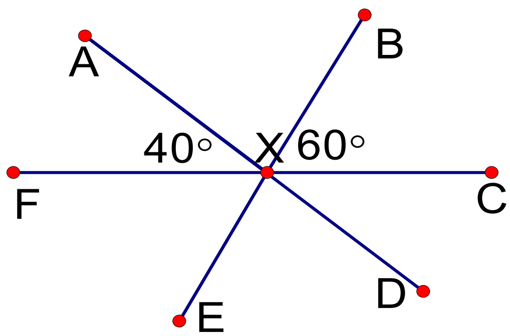
6 __________ = m<FXB

7 __________ = m<FXE

8 __________ = m<CXD

9 __________ = m<DXE

10 __________ = m<CXE



11 __________ = m<FXC

12 __________ = m<FXD

13 __________ = m<AXD

14 __________ = m<AXE

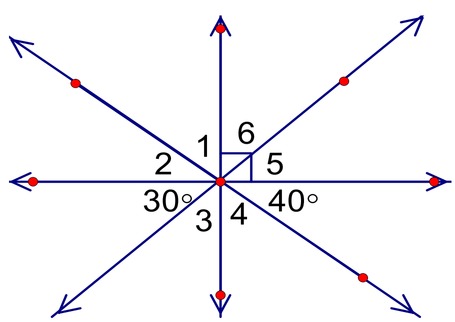
15 __________ = m<BXD

16 __________ = m<AXC

17 __________ = m<1

18 __________ = m<2

19 __________ = m<3



20 __________ = m<4

21 __________ = m<5

22 __________ = m<6

m<AEB = 5x + 5; m<BEC = 15x + 15

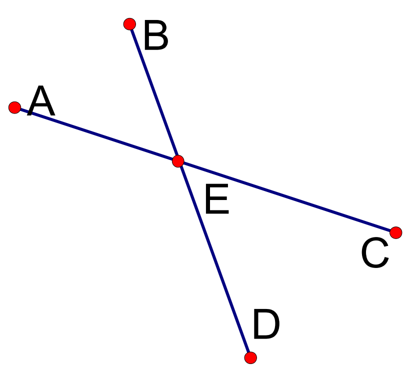
23 __________ = x

24 __________ = m<BEC

25 __________ = m<AED

26 __________ = m<AEB

27 __________ = m<DEC



m<AEB = 3x + 20; m<CED = 5x - 10

28 __________ = x

29 __________ = m<BEC

30 __________ = m<AED

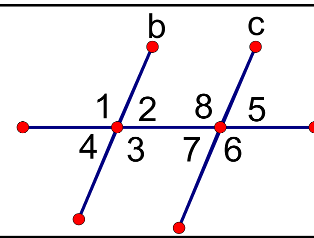
31 __________ = m<AEB

32 __________ = m<DEC

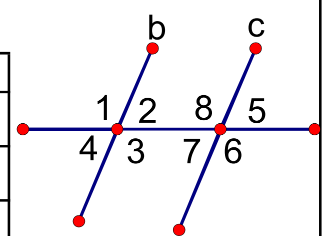
Perpendicular and Parallel Lines

If a transversal intersects two PARALLEL lines: b ∥ c

* then the alternate interior angles are CONGRUENT. <2 ≅ <7
* then the alternate exterior angles are CONGRUENT. <1 ≅ <6
* then the corresponding angles are CONGRUENT. <4 ≅ <7
* then the same-side interior angles are SUPPLEMENTARY. m<2 + m<8 = 180
* and it is perpendicular to one line, then it is perpendicular to the other line also.



Find all the remaining angles from the given angle measure. b ∥ c



	m<1 =	m<2 =	m<3 =	m<4 =	m<5 =	m<6 =	m<7 =	m<8 =
1	150°							
2							70°	
3				65°				
4		x°						

5 <1 ≅ <____ ≅<____ ≅<____

6 <1 is supplementary with <___, <___, <___ & <___.

Find the angle measure with the given information. m ∥ p & k ∥ r

7 m<2 = 80° m<12 = ________

8 m<15 = 78° m<2 = ________

9 m<8 = 110° m<5 = ________

10 m<13 = 84° m<12 = ________

11 m<5 = 86° m<16 = ________

12 m<3 = 108° m<13 = ________

13 m<1 = 110° m<12 = ________

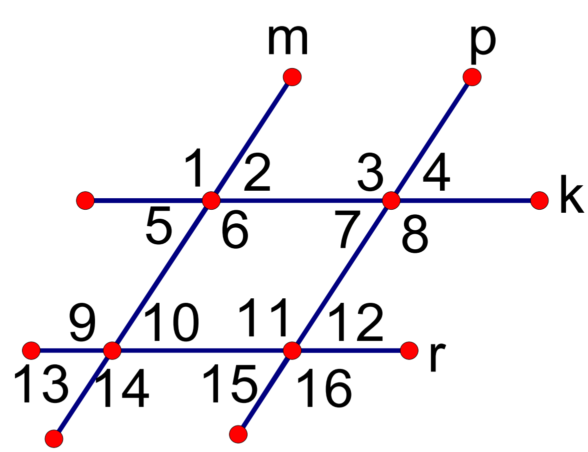
14 m<7 = 88° m<9 = ________

15 m<6 + m<14 = 190° m<3 = ________

16 m<12 + m<15 = 150° m<5 = ________

17 m<9 + m<14 = 180° m<4 = ________

18 m<5 + m<7 = 158° m<12 = ________



Use the figure above to fill in the boxes with angles congruent to the given angle.

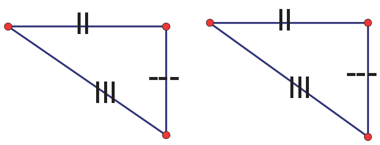
19 <1 ≅

20 <2 ≅

Congruent Triangles

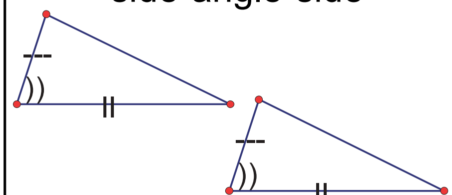
Ways to Prove Triangles are Congruent:

SSS
side-side-side



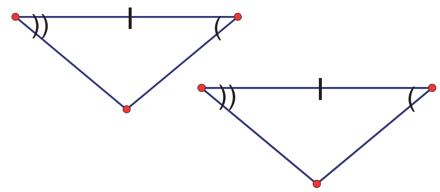
All corresponding sides are congruent.

SAS
side-angle-side



2 corr. sides and the angle between are congruent.

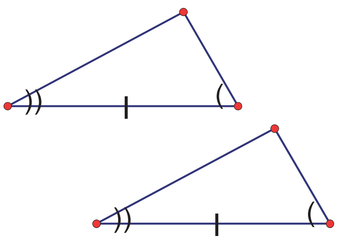
ASA
angle-side-angle



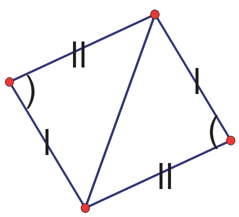
2 corr. angles and the side between are congruent.

Name the postulate: SSS, SAS, or ASA that proves the triangles congruent.

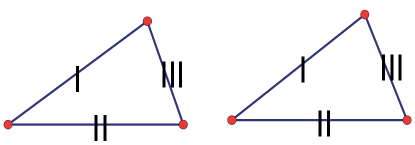
1



2

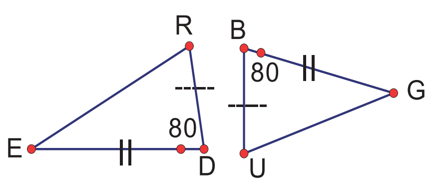


3

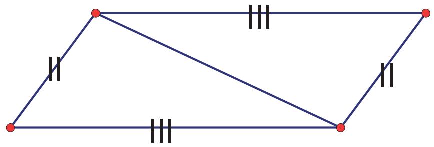


4 Write the congruence statement.

Δ_ _ _ ≅ Δ_ _ _

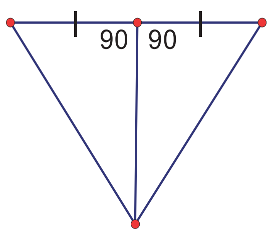


5

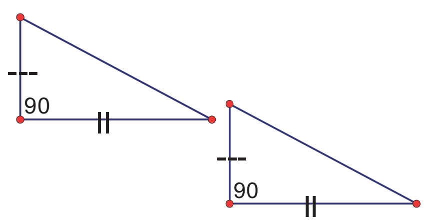


*Hint: A shared side is considered a congruent corresponding side.

6

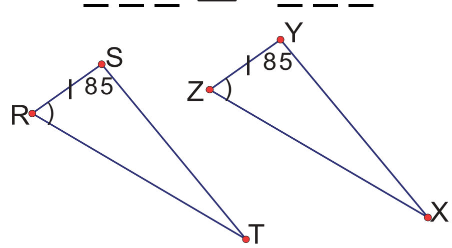


7

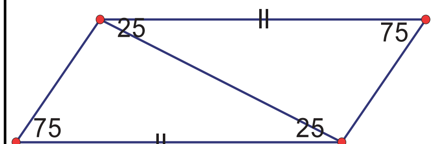


8 Write the congruence statement.

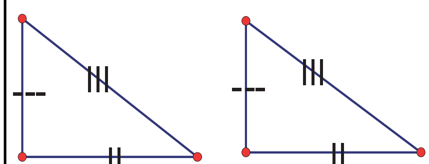
Δ_ _ _ ≅ Δ_ _ _



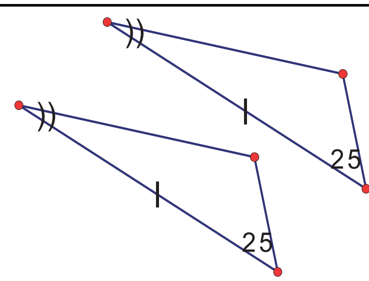
9



10

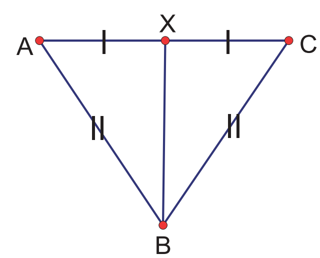


11



12 Write the congruence statement.

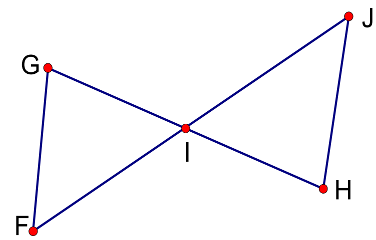
Δ_ _ _ ≅ Δ_ _ _



Congruent Triangles

Proofs

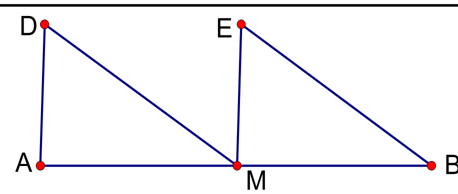
1) Given: GH and FJ bisect each other.



Prove: $\Delta FGI \cong \Delta JHI$

STATEMENTS | REASONS

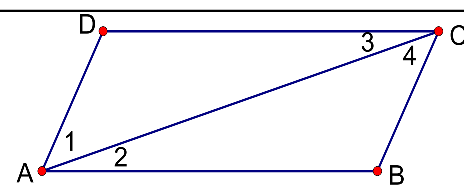
2) Given: M is the midpoint of AB; AD II ME; DM II EB



Prove: $DM \cong EB$

STATEMENTS | REASONS

3) Given: AB II DC; $AB \cong DC$



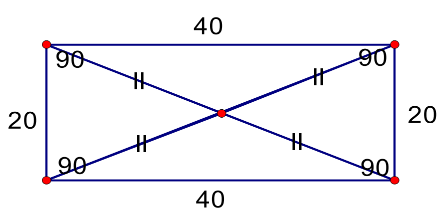
Prove: <B ≅ <D

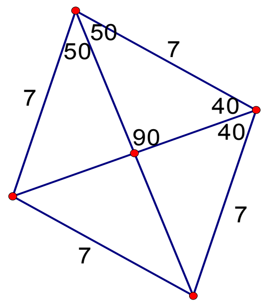
STATEMENTS | REASONS

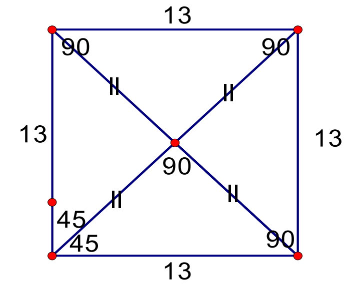
Quadrilaterals I

Special Parallelograms

All three of these have all the properties of a parallelogram also.

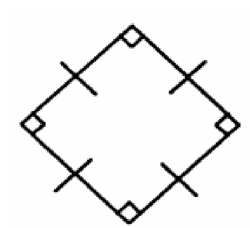
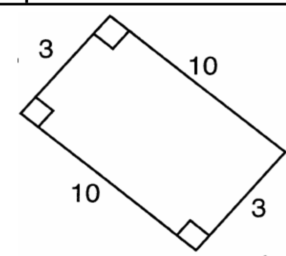
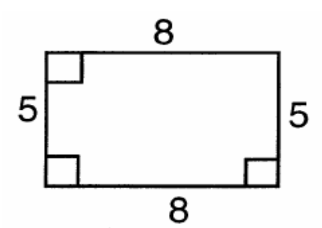
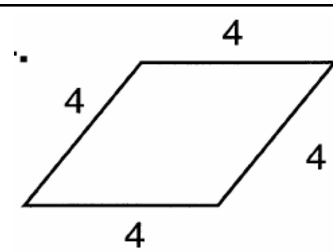
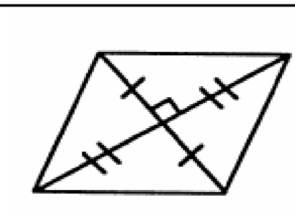
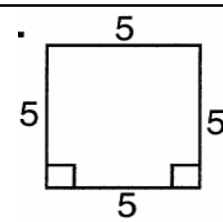
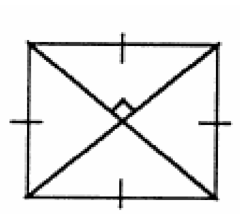
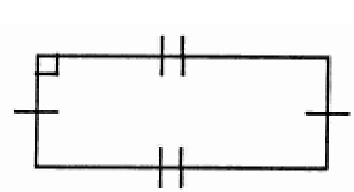
<table>
<tr><th>Rectangle</th><th>Rhombus</th><th>Square</th></tr>
<tr>
<td>

• It has all right angles.
• Diagonals are congruent.</td>
<td>

• All sides are congruent.
• Diagonals are perpendicular.
• Diagonals bisect opposite angles.</td>
<td>

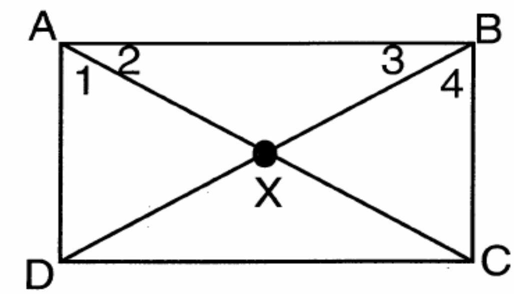
• All sides are congruent.
• It has all right angles.
• Diagonals are congruent.
• Diagonals are perpendicular.
• Diagonals bisect opposite angles.</td>
</tr>
</table>

Classify the following parallelograms as a rectangle, rhombus, or square.

<table>
<tr><td>1
</td><td>5

</td></tr>
<tr><td>2

</td><td>6

</td></tr>
<tr><td>3
</td><td>7

</td></tr>
<tr><td>4
</td><td>8
</td></tr>
</table>

Quadrilaterals I

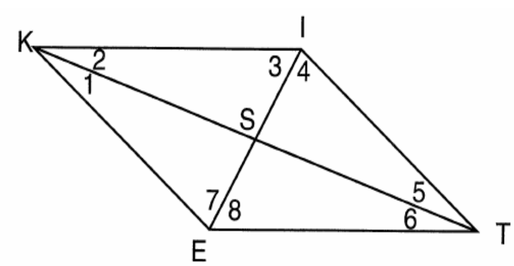
ABCD is a rectangle. AB = 12; BC = 9; m<1 = 60°



1 DC = ________
2 AD = ________
3 AC = ________
4 AX = ________
5 m<ADC = ________
6 m<2 = ________
7 DB = ________
8 DX = ________
9 m<3 = ________
10 m<4 = ________

You will need to use pythagorean theorem: $a^2 + b^2 = c^2$.

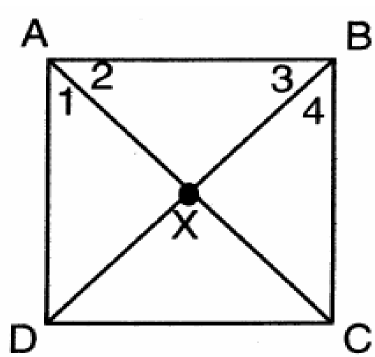
KITE is a rhombus. KI = 5; m<ITE = 60°; KT = 8



11 ET = ________
12 m<EKI = ________
13 m<1 = ________
14 m<KSE = ________
15 KS = ________
16 m<KIT = ________
17 m<7 = ________
18 SI = ________
19 m<4 = ________
20 EI = ________

You will need to use pythagorean theorem: $a^2 + b^2 = c^2$.

ABCD is a square. CD = 10



21 AB = ________
22 m<ABC = ________
23 BC = ________
24 m<BCD = ________
25 m<1 = ________
26 BD = ________
27 m<CXD = ________
28 AC = ________
29 m<4 = ________
30 XD = ________

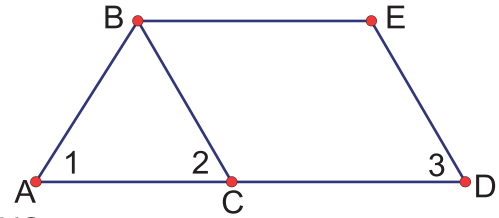
You will need to use pythagorean theorem: $a^2 + b^2 = c^2$.

Quadrilaterals II

Proofs

1) Given: CBED is a parallelogram;
<1 ≅ <2; AB ≅ CD

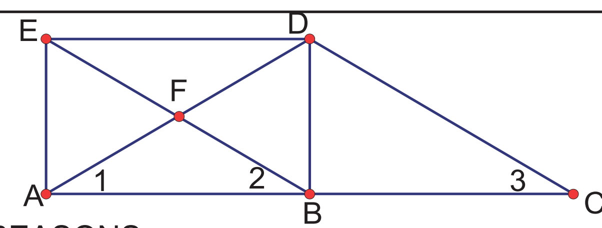
Prove: CBED is a rhombus.



STATEMENTS	REASONS

2) Given: AEDB is a rectangle.;
EDCB is a parallelogram.

Prove: ∆ADC is isosceles.

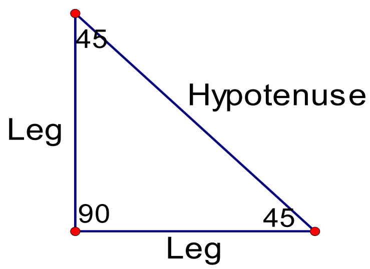


STATEMENTS	REASONS

Special Right Triangles

These two triangles have special relationships among their sides. Memorize the formulas for the class.

45° - 45° - 90° Triangle

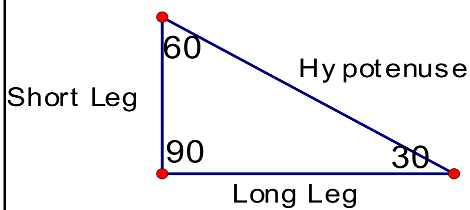


Since a 45-45-90 is an isosceles triangle, the legs are congruent. If a right triangle is marked with it acute angles congruent, this is a 45-45-90 triangle.

Leg to Hypotenuse: multiply the number by √2
Hypotenuse to Leg: divide the number by √2.

$H = L\sqrt{2}$

30° - 60° - 90° Triangle



The short leg (S) is across from the 30° angle.
The long leg (L) is across from the 60° angle.

Short Leg to Hypotenuse: multiply the number by 2
Short Leg to Long Leg: multiply the number by √3

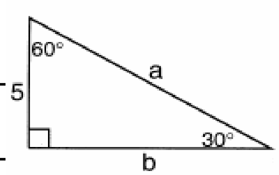
Hypotenuse to Short Leg: divide the number by 2
Long Leg to Short Leg: divide the number by √3

Always try to find the short leg first!

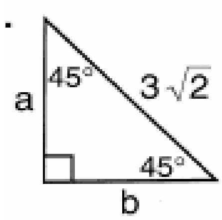
$L = S\sqrt{3}$ $H = 2S$

Solve for the variables.

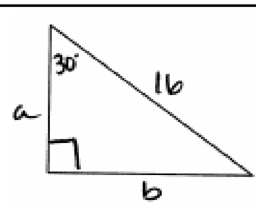
1
a = ________
b = ________



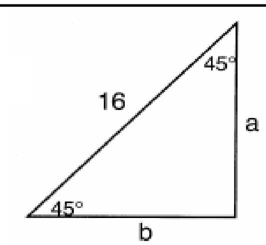
2
a = ________
b = ________



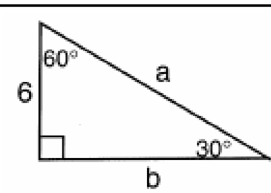
3
a = ________
b = ________



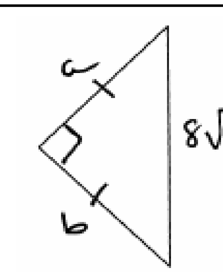
4
a = ________
b = ________



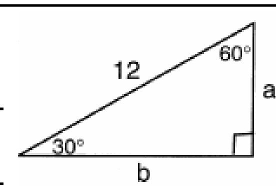
5
a = ________
b = ________



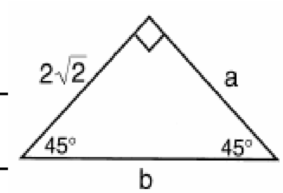
6
a = ________
b = ________



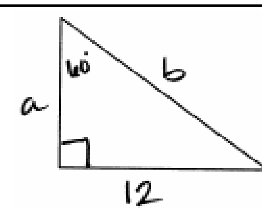
7
a = ________
b = ________



8
a = ________
b = ________



9
a = ________
b = ________

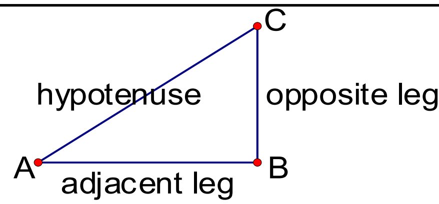


Right Triangle Trigonometry

Right Triangle Trigonometry

Tangent Ratio

tangent of <A = leg opposite <A / leg adjacent to <A



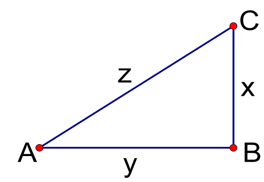
also seen as:

tan A = opposite / adjacent

Each acute angle in the triangle has its own tangent ratio.

For this triangle: tan A = x / y = opposite / adjacent

The legs switch for the other acute angle. tan C = y / x = opposite / adjacent

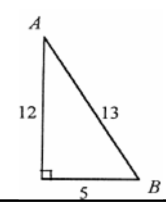


Find the tangent ratio for each acute angle.

1

tan A = 5/12

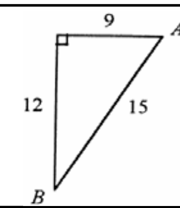
tan B =



3

tan A =

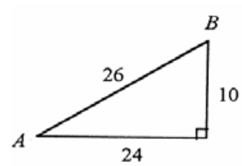
tan B =



2

tan A =

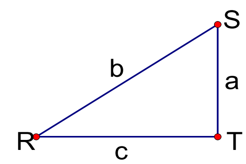
tan B =



4

tan R =

tan S =

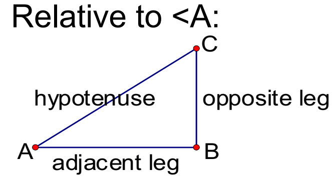


Sine & Cosine Ratios

sine ratio = opposite leg / hypotenuse

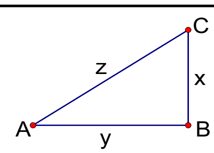
cosine ratio = adjacent leg / hypotenuse

Relative to <A:



sin A = x/z
sin C = y/z

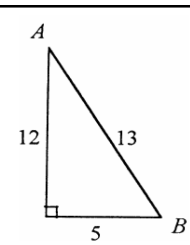
cos A = y/z
cos C = x/z



Find the sine & cosine ratios for each acute angle.

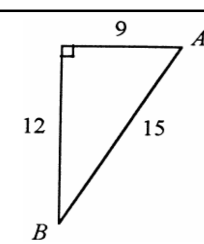
5

sin A = 5/13
sin B =
cos A =
cos B =



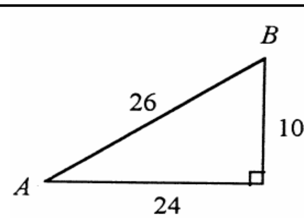
7

sin A =
sin B =
cos A =
cos B =



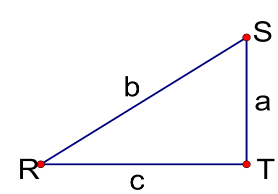
6

sin A =
sin B =
cos A =
cos B =



8

sin R =
sin S =
cos R =
cos S =

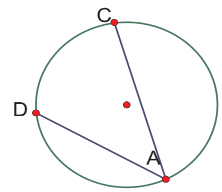


Circles I

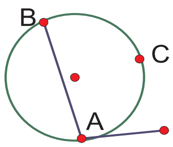
<u>Inscribed angles</u>: its vertex is on a circle and its sides are chords of the circle

The measure of an inscribed angle is half the measure of its intercepted arc.

m<A = ½m$\overset{\frown}{CD}$ ex: If m<A = 30°, then m$\overset{\frown}{CD}$ = 60°.



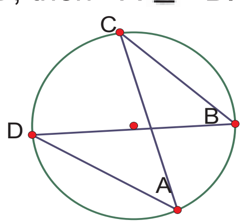
Also: the measure of an angle formed from a chord and a tangent is half its intercepted arc



m<A = ½m$\overset{\frown}{BCA}$ ex: If $\overset{\frown}{BCA}$ = 150°, then m<A = 75°.

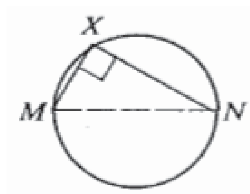
If 2 inscibed angles intercept the same arc, then angles are congruent.

Since <A & <B both intercept arc CD, then <A ≅ <B.



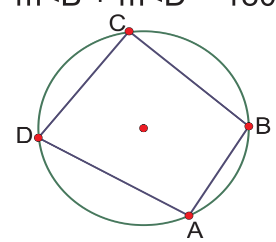
An angle inscribed in a semicircle is a right angle.

Since $\overset{\frown}{MXN}$ is a 180°, its inscribed angle X must be 90°.



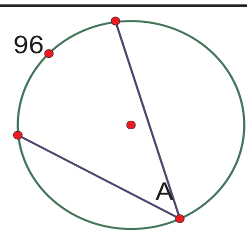
If a quadrilateral is inscribed in a circle, its opposite angles are supplementary.

m<A + m<C = 180°
m<B + m<D = 180°



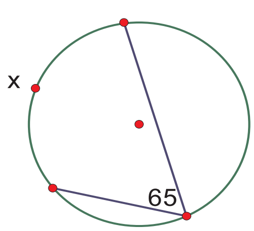
1

m<A = _____



2

x = _____

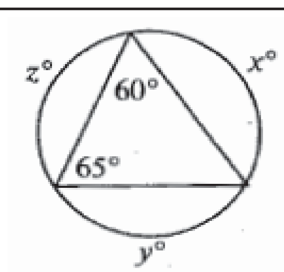


3

x = _____

y = _____

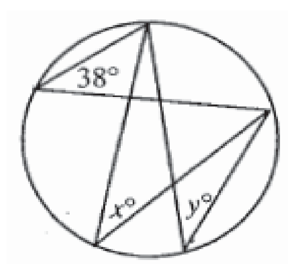
z = _____



4

x = _____

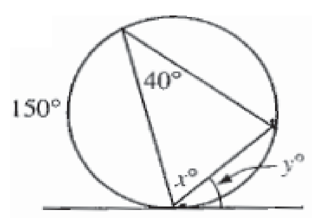
y = _____



5

x = _____

y = _____

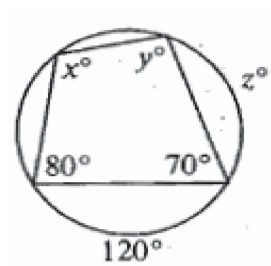


6

x = _____

y = _____

z = _____

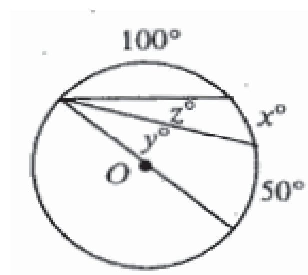


7

x = _____

y = _____

z = _____

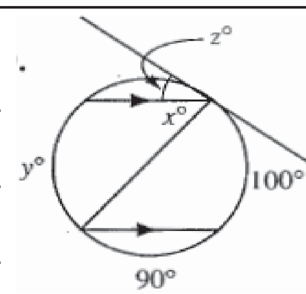


8

x = _____

y = _____

z = _____

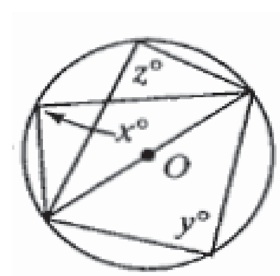


9

x = _____

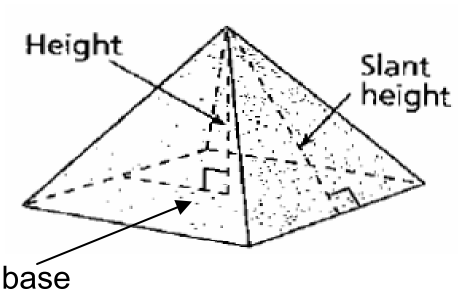
y = _____

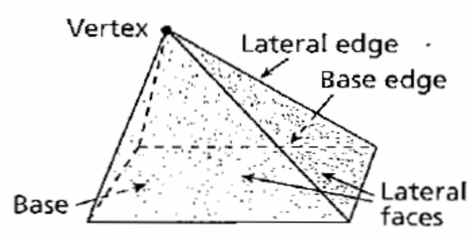
z = _____



Solids I - Prisms and Pyramids

PYRAMIDS - Surface Area & Volume





*Notice the height and slant height form a right triangle with the base.

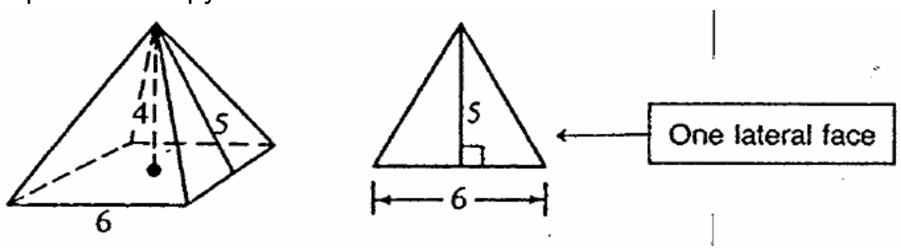
SURFACE AREA (SA) = Sum of Areas of Faces

VOLUME (V) = ⅓ x Base Area (B) x Height (h)

$V = \frac{1}{3}Bh$

Find the surface area and volume of the solid.

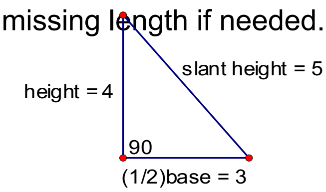
ex square based pyramid



5 is the slant height used in finding SA.

4 is the regular height used in finding V.

This relationship can be used to find a missing length if needed.



To find SA, pull off one lateral triangle and find its area first.

SA = 4(area of side triangle) + base

$SA = 4(\frac{1}{2} \cdot 6 \cdot 5) + 6^2$

SA = 60 + 36 = 96

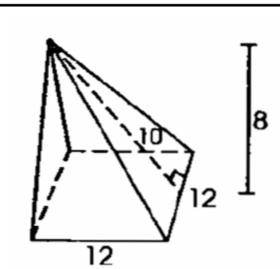
$V = \frac{1}{3} \cdot B \cdot h$

$V = \frac{1}{3} \cdot 6^2 \cdot 4$

V = 48

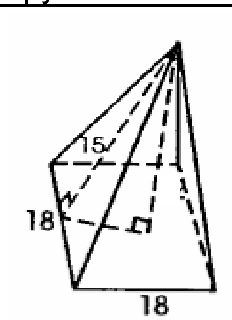
Find the surface area and volume of each square based pyramid.

1



SA = ______ V = ________

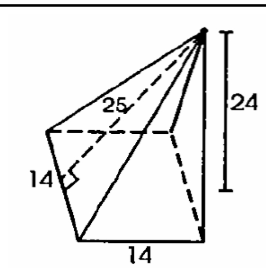
3



*Use the special right triangle relationship to find the height.

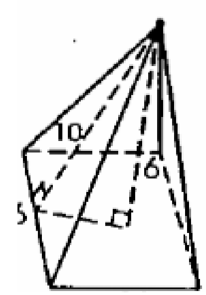
SA = ______ V = ________

2



SA = ______ V = ________

4



SA = ______ V = ________