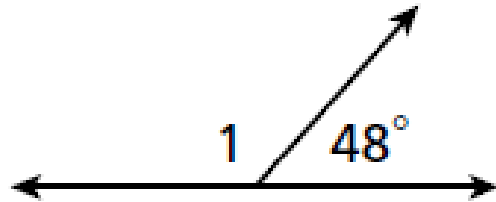


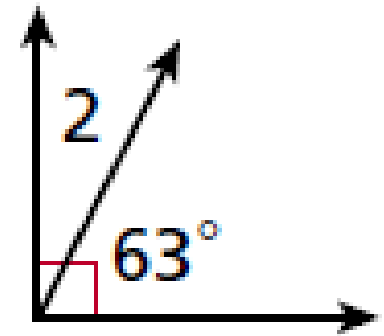
Warm Up

Find the measure of each missing angle.

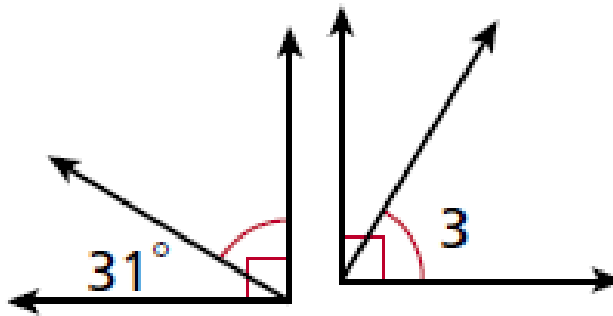
$m\angle 1$



$m\angle 2$



$m\angle 3$



Homework – Geom Pg 148 – 10 pts

11) Alt Ext

12) Alt Int

13) Same Side

22) Corresp

23) Alt Int

24) Alt Ext

25) Same Side

27) Corresp

28) Alt Int

29) Same Side

3.2 Angles formed by Parallel Lines and Transversals

Your Learning Objectives:

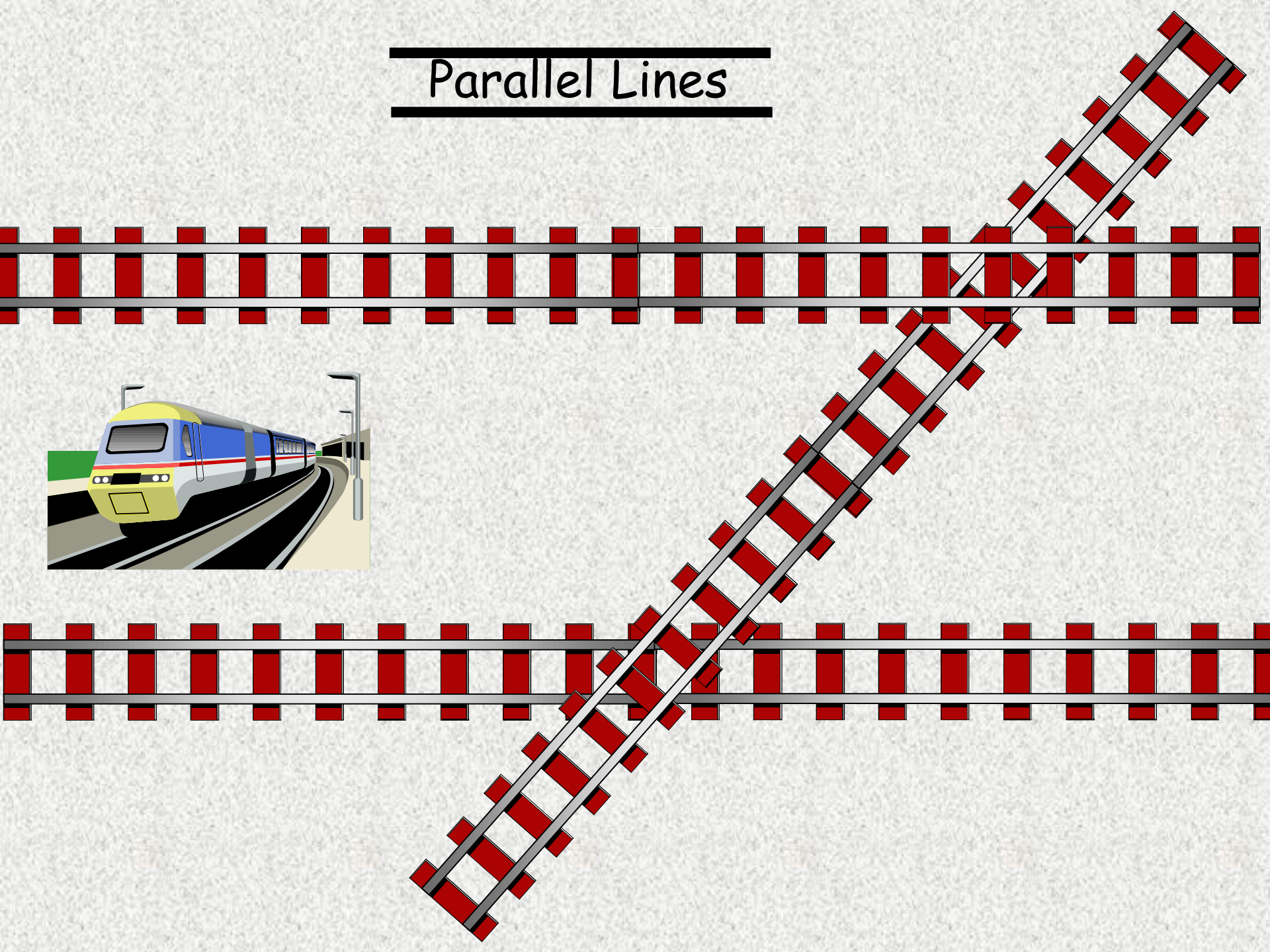
***Identify angles* formed by parallel lines and cut by a transversal**

- Vertical
- Corresponding
- Alternate Interior
- Alternate Exterior
- Same Side Interior

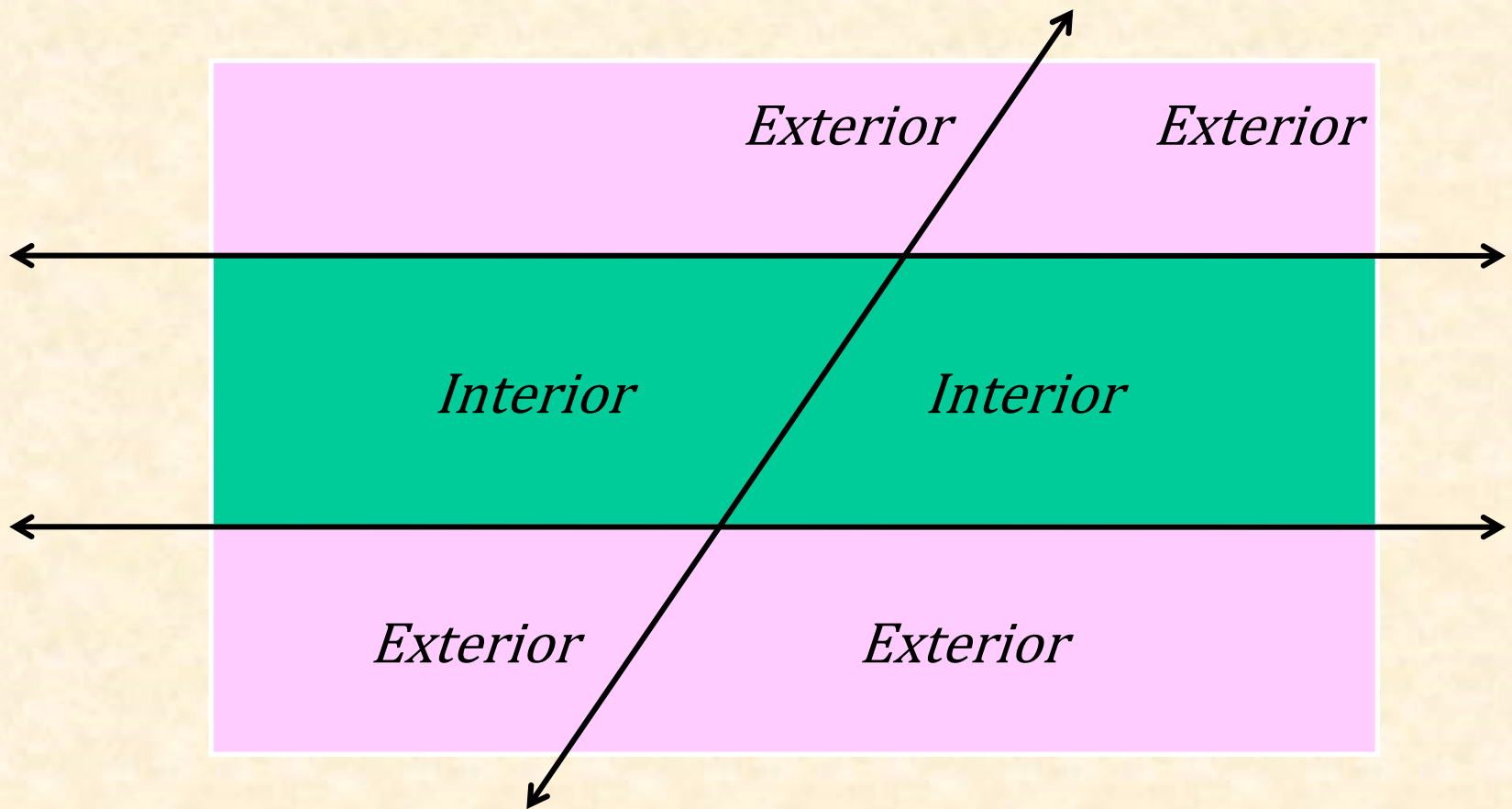
Apply properties of angles to geometric shapes

- Such as Trapezoids
- And Parallelograms

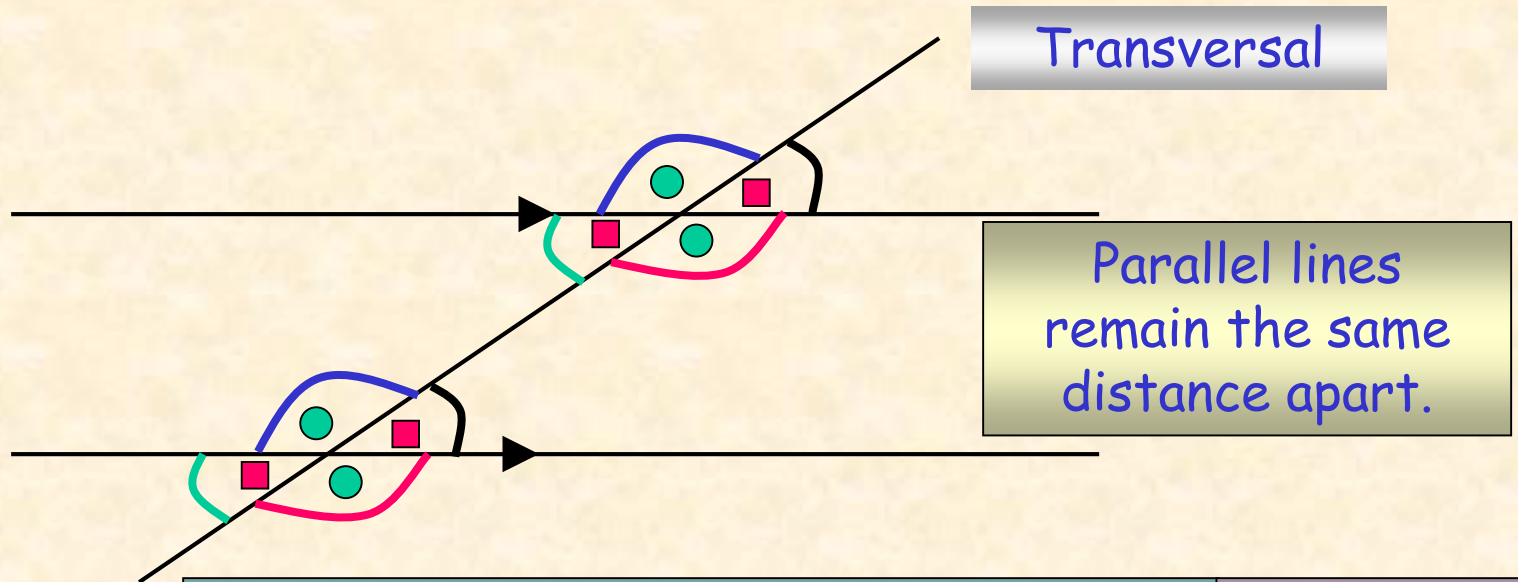
Parallel Lines



Angles formed above and below parallel lines are called *Exterior angles* and angle formed between parallel lines are called *Interior angles*



Angles Between Parallel lines.



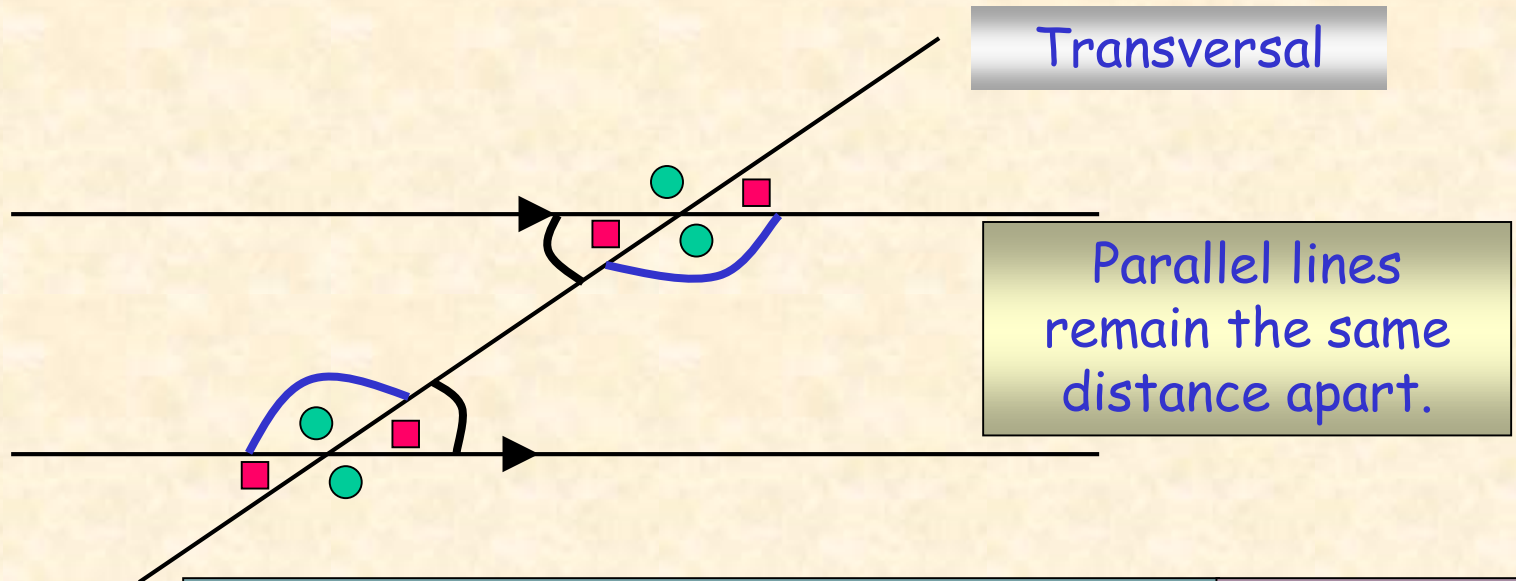
Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

Angles Between Parallel lines



Vertical angles are equal.

vert. \angle s

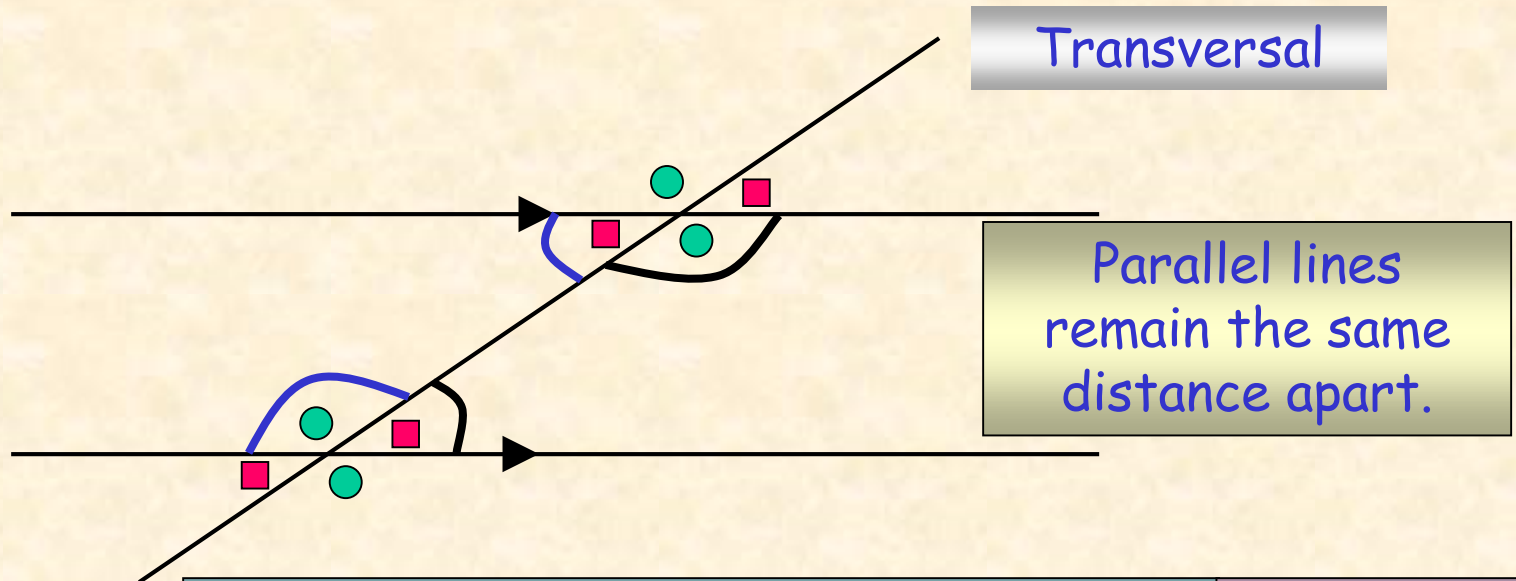
Corresponding angles are equal.

corr. \angle s

Alternate Interior angles are equal.

alt. \angle s

Angles Between Parallel lines



Vertical angles are equal.

Vert. \angle s

Corresponding angles are equal.

corr. \angle s

Alternate angles are equal.

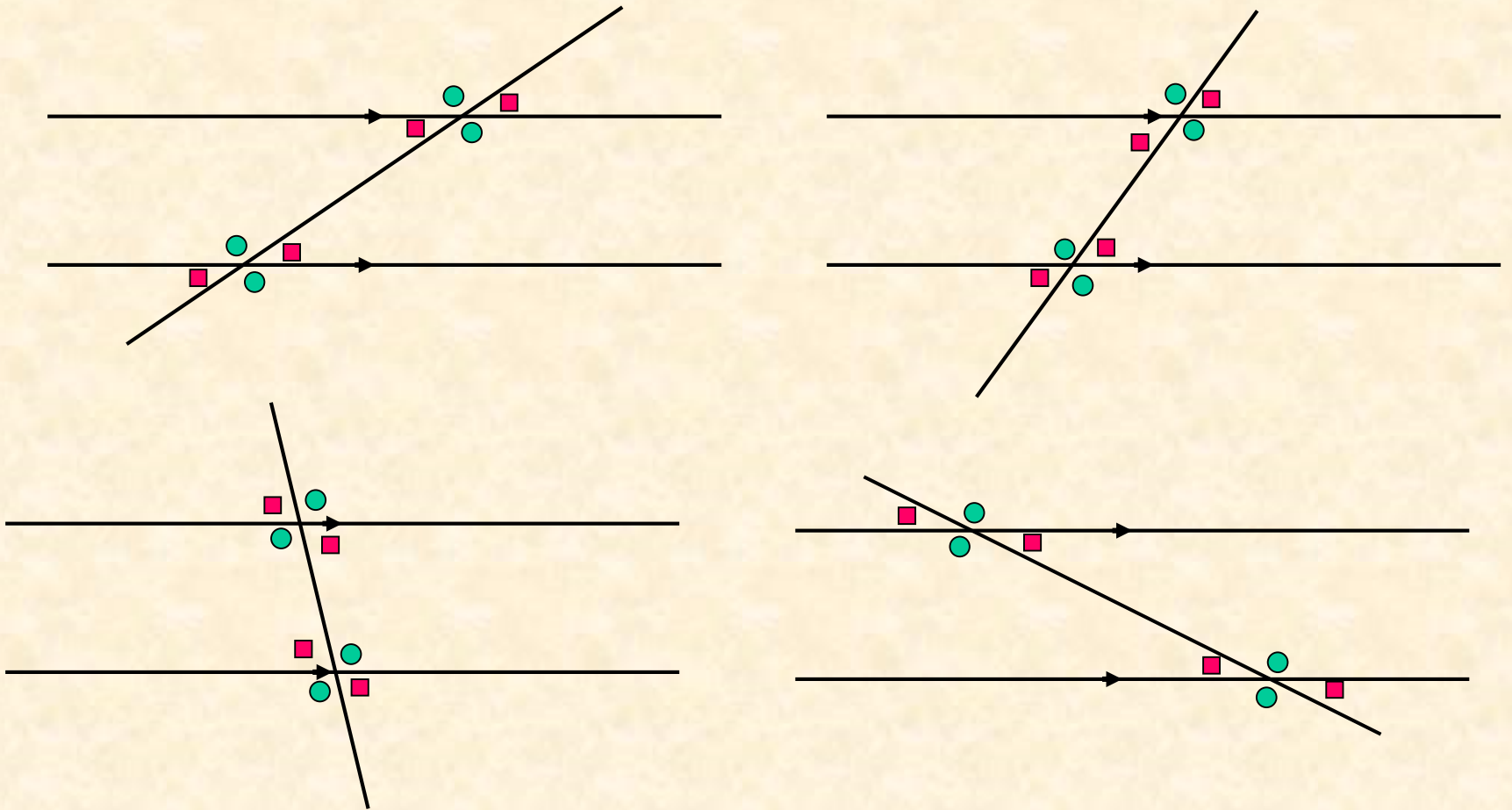
alt. \angle s

Same Side Interior angles are Supplementary

Same Side
Int. \angle s

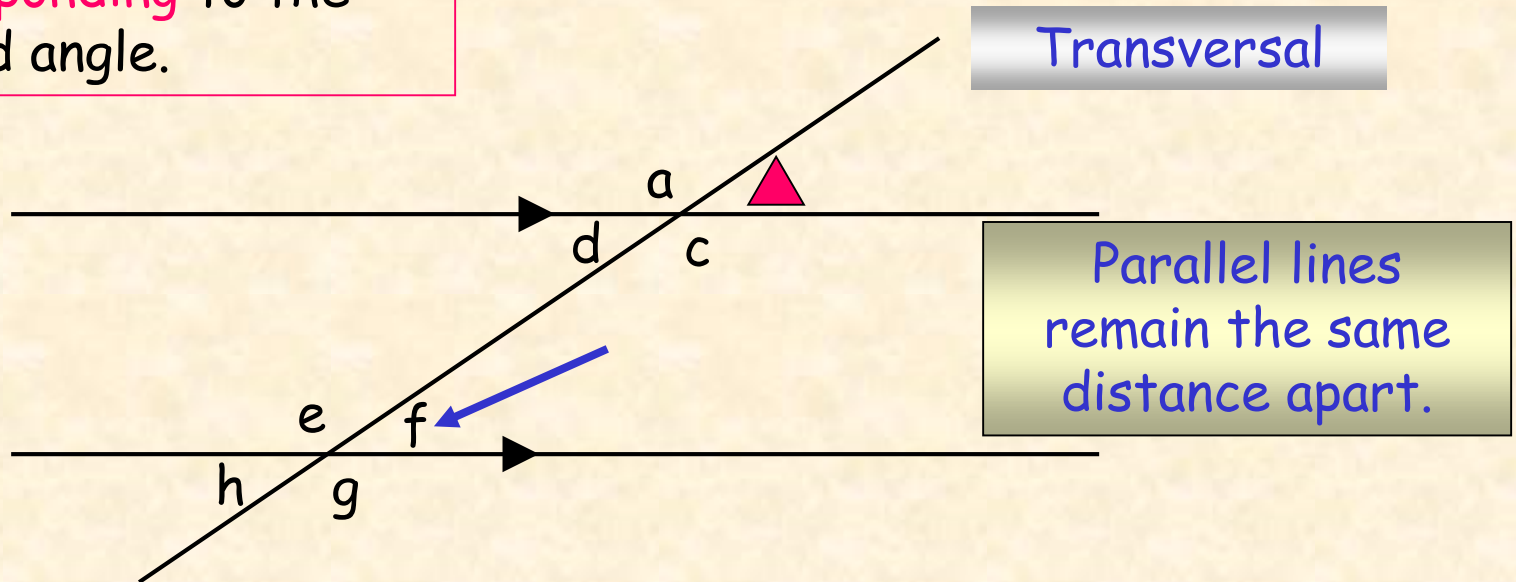
Angles Between Parallel lines

Come in many shapes and sizes



Angles Between Parallel lines

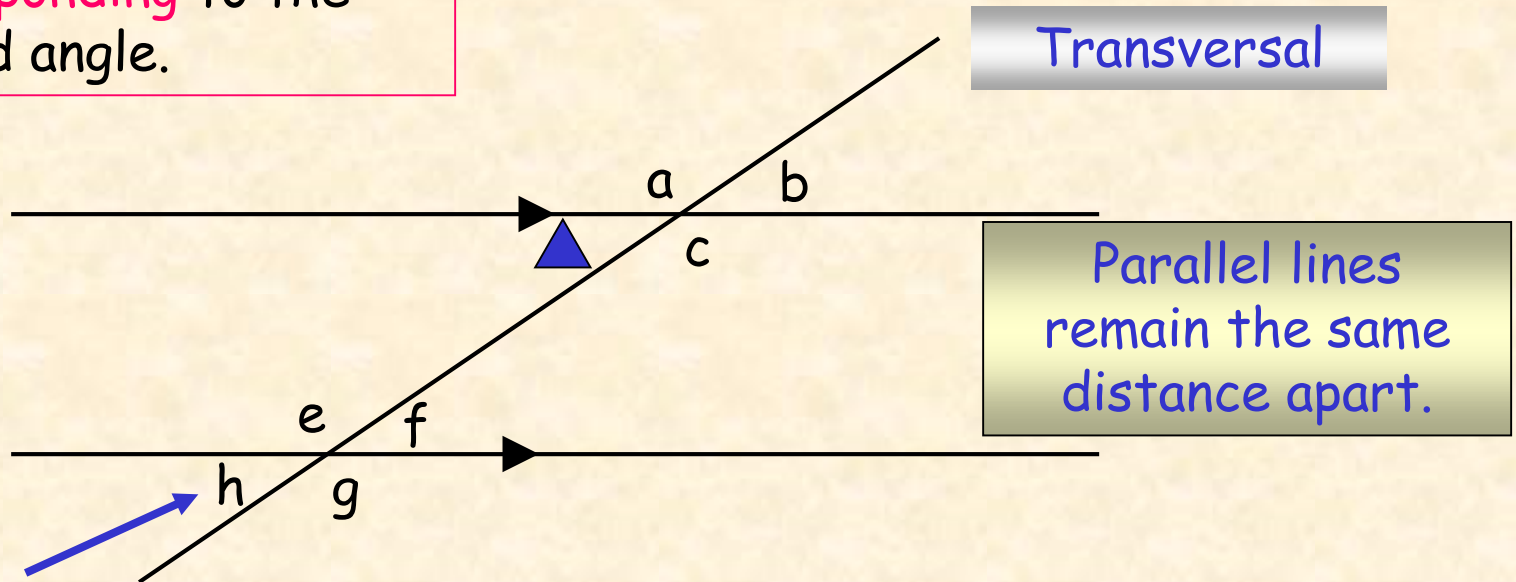
Name an angle
corresponding to the
marked angle.



	Vertical angles are equal.	vert. \angle s
*	Corresponding angles are equal.	corr. \angle s
	Alternate angles are equal.	alt. \angle s
	Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

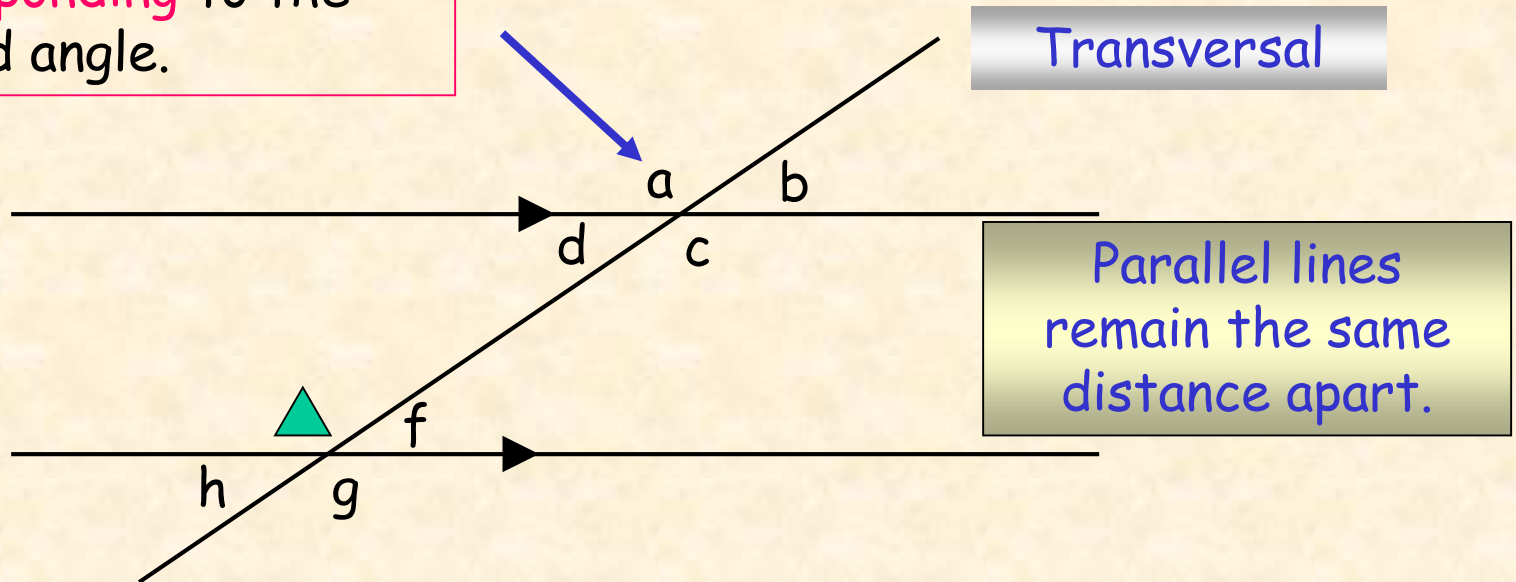
Name an angle
corresponding to the
marked angle.



	Vertical angles are equal.	vert. \angle s
*	Corresponding angles are equal.	corr. \angle s
	Alternate angles are equal.	alt. \angle s
	Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

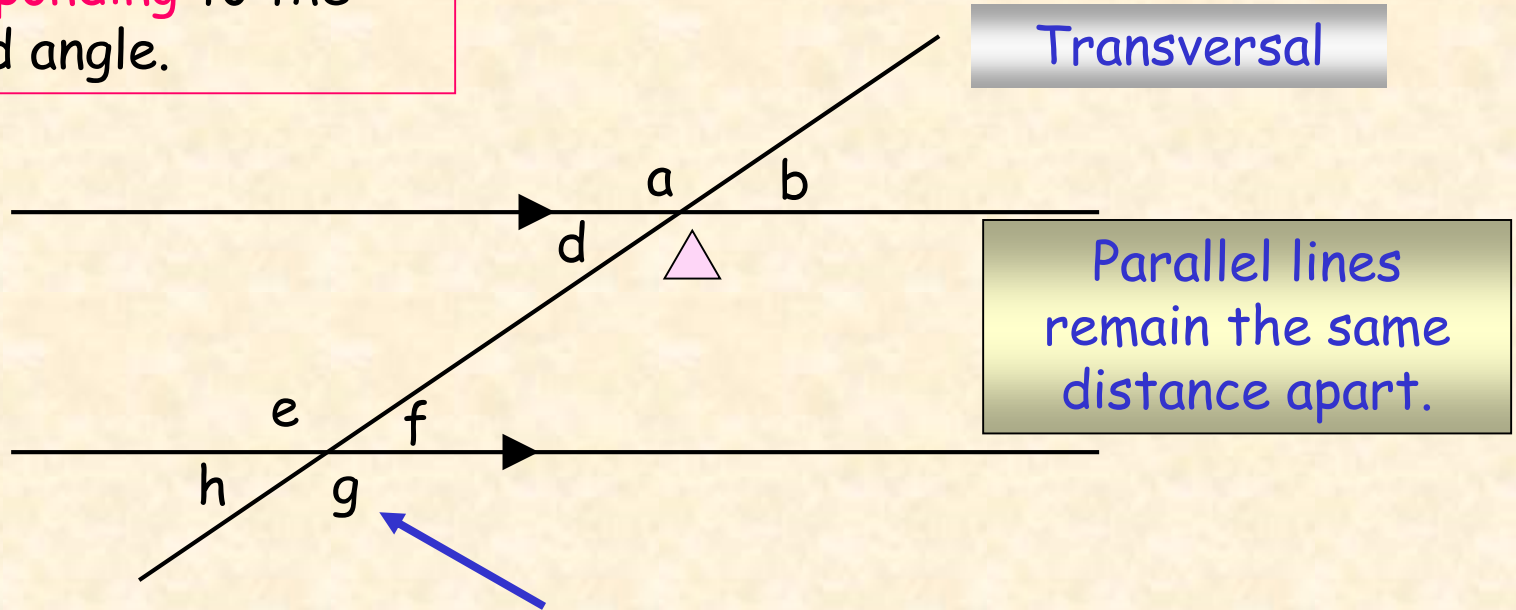
Name an angle
corresponding to the
marked angle.



	Vertical angles are equal.	vert. \angle s
*	Corresponding angles are equal.	corr. \angle s
	Alternate angles are equal.	alt. \angle s
	Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

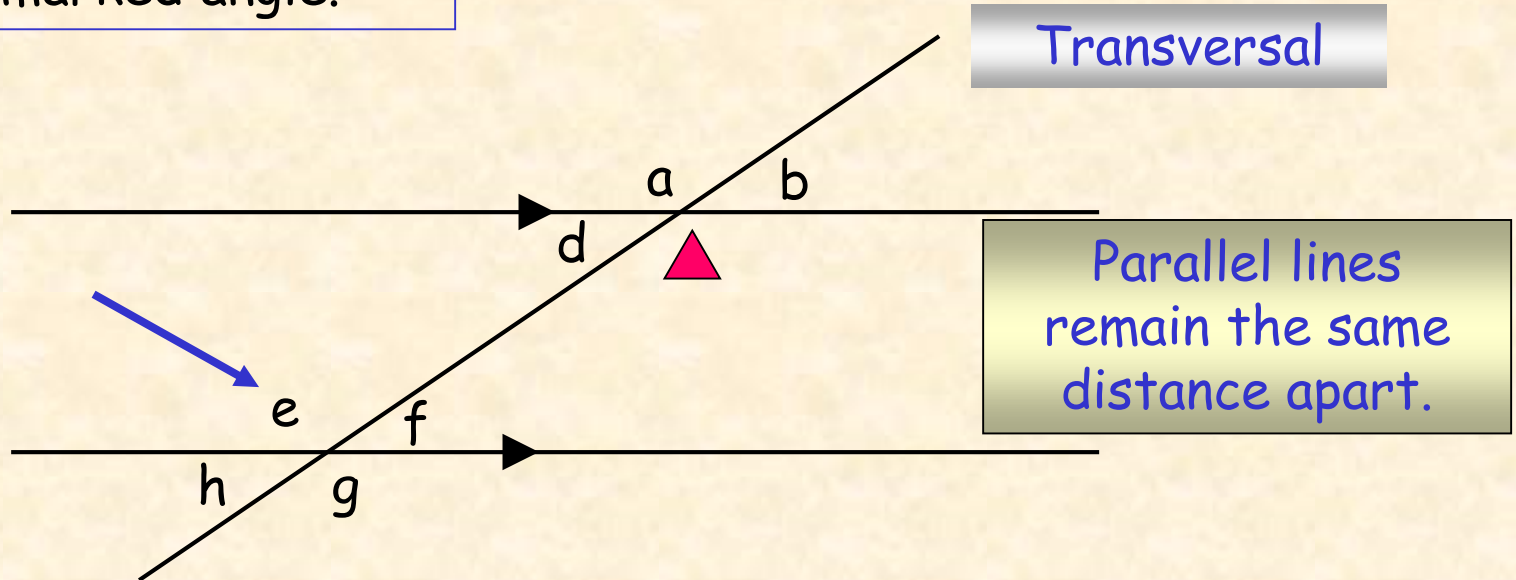
Name an angle **corresponding** to the marked angle.



	Vertical angles are equal.	vert. \angle s
*	Corresponding angles are equal.	corr. \angle s
	Alternate angles are equal.	alt. \angle s
	Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

Name an angle **alternate** to the marked angle.



Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

* **Alternate** angles are equal.

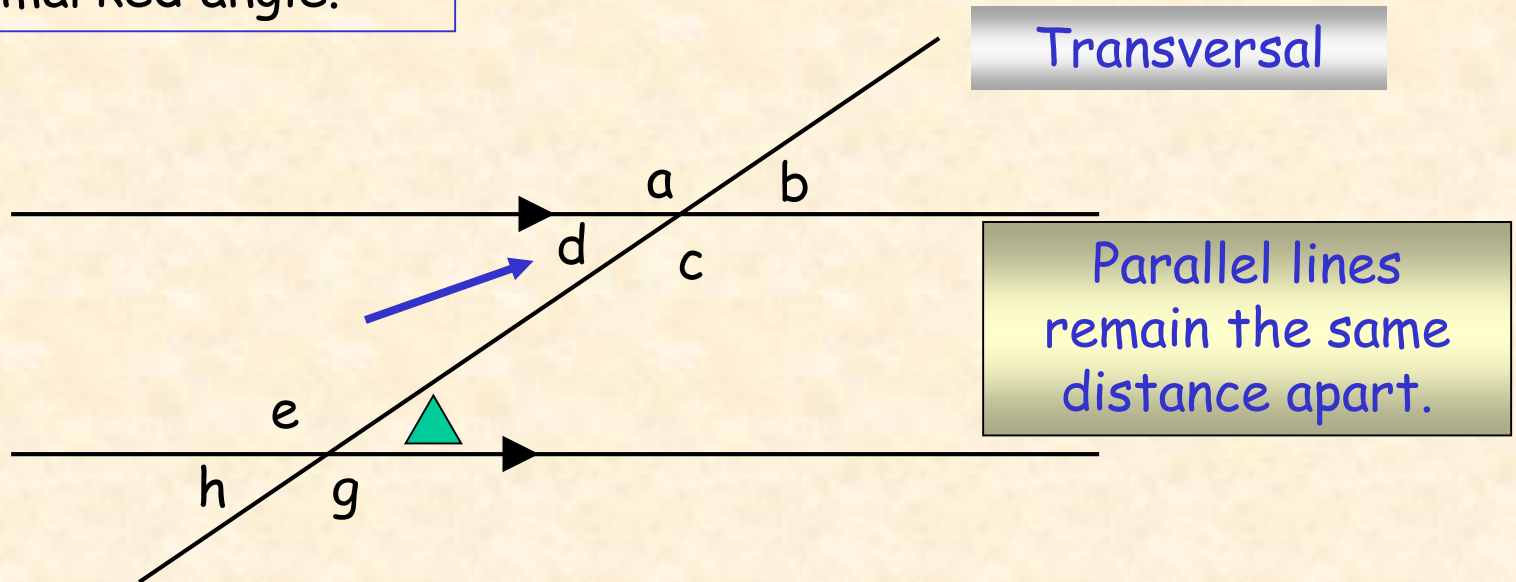
alt. \angle s

Same Side Interior angles sum to 180° .
(Supplementary)

Same Side
Int. \angle s

Angles Between Parallel lines

Name an angle **alternate** to the marked angle.



Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

*

Alternate angles are equal.

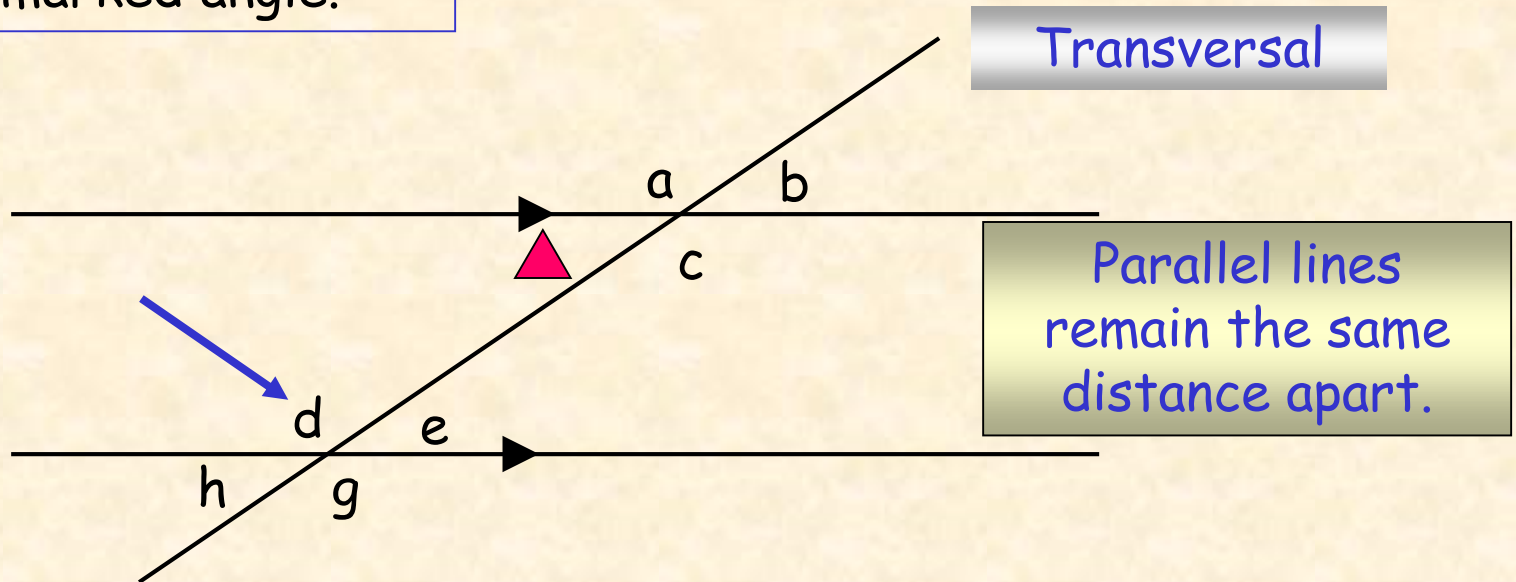
alt. \angle s

Same Side Interior angles sum to 180°
(Supplementary)

Same Side
Int. \angle s

Angles Between Parallel lines

Name an angle **interior** to the marked angle.



Vertical are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

Alternate angles are equal.

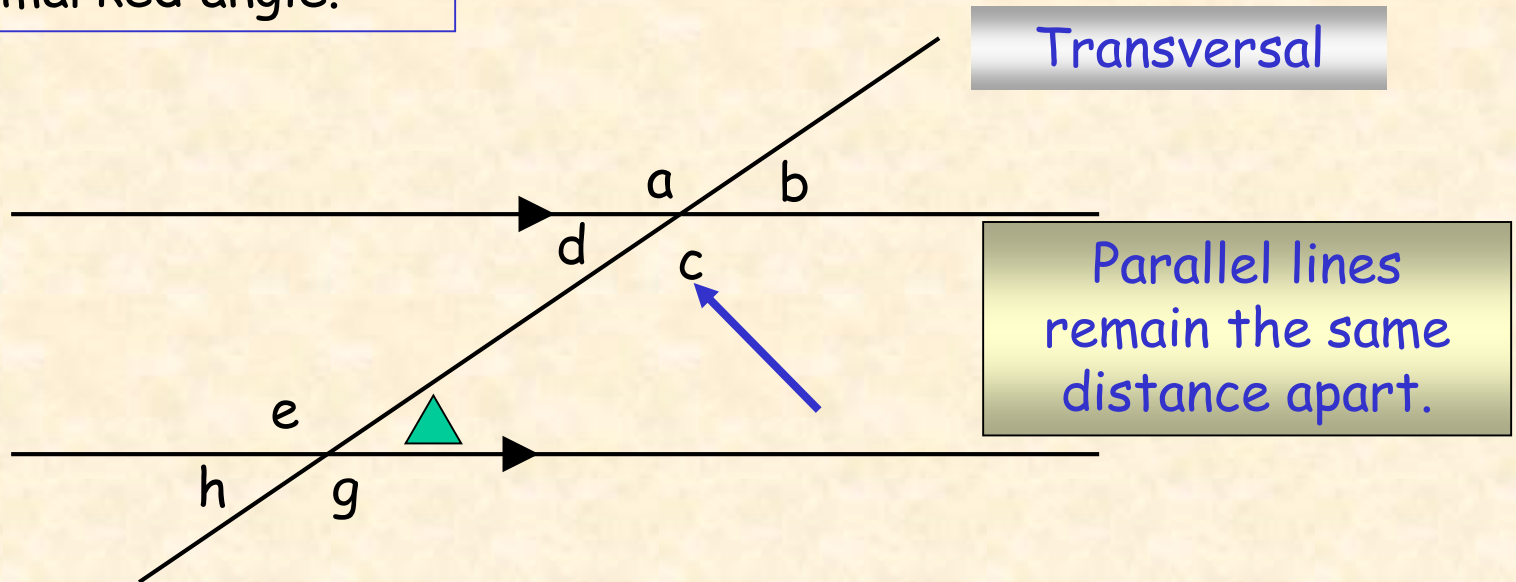
alt. \angle s

* **Same Side Interior** angles sum to 180° .
(Supplementary)

Same Side
Int. \angle s

Angles Between Parallel lines

Name an angle **interior** to the marked angle.



Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

Alternate angles are equal.

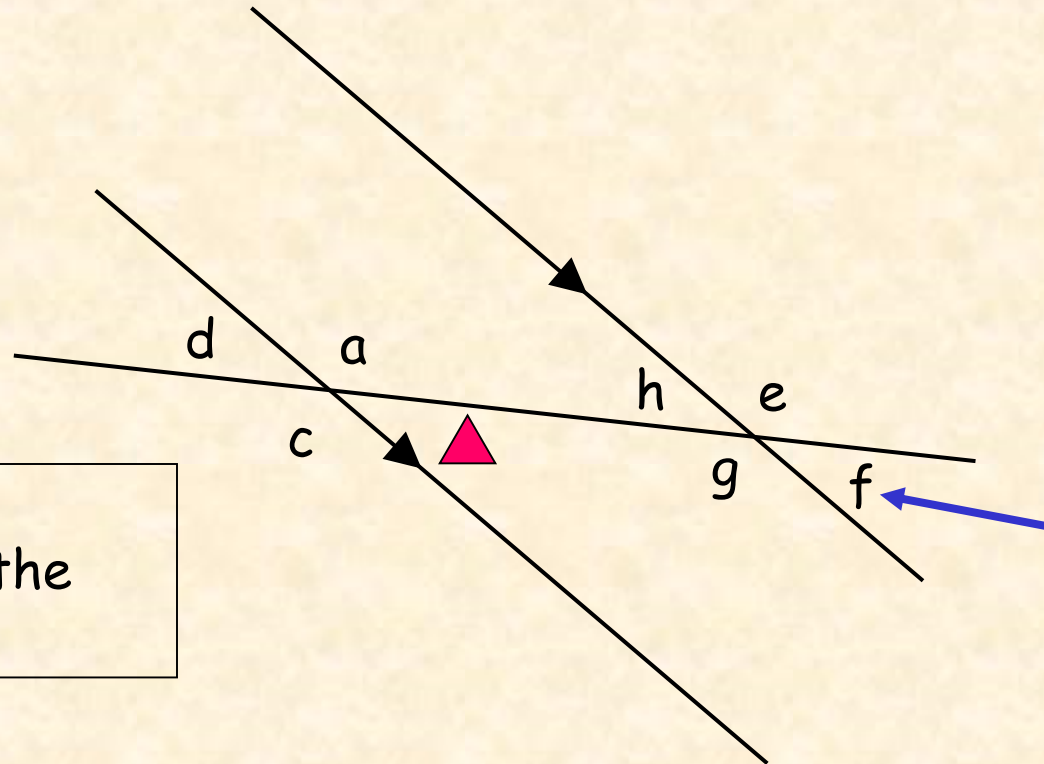
alt. \angle s

*

Same Side Interior angles sum to 180° .
(Supplementary)

Same Side
Int. \angle s

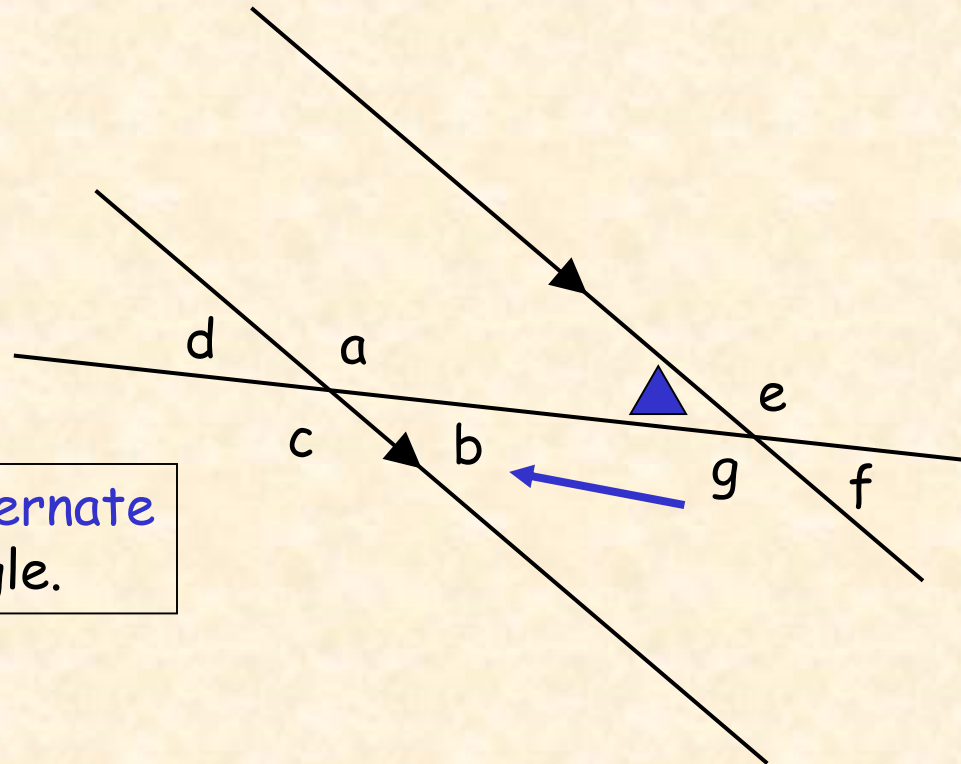
Angles Between Parallel lines



Name an angle
corresponding to the
marked angle.

* Vertical angles are equal.	vert. \angle s
* Corresponding angles are equal.	corr. \angle s
* Alternate angles are equal.	alt. \angle s
* Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines



Name an angle **alternate** to the marked angle.

Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

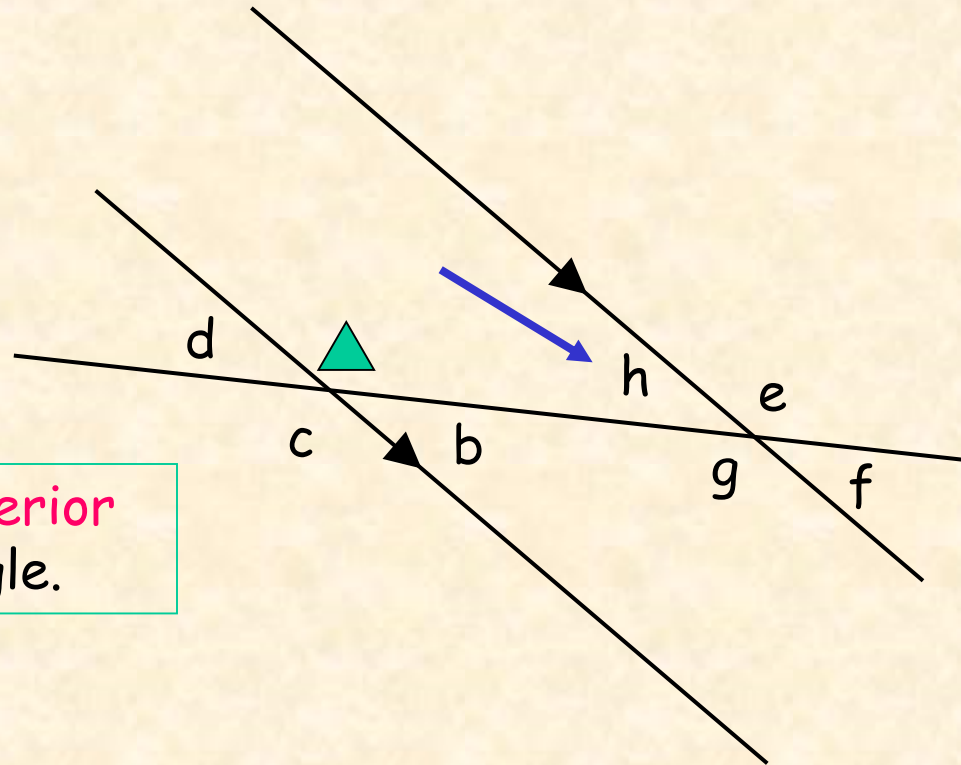
* **Alternate** angles are equal.

alt. \angle s

Same Side Interior angles sum to 180° .
(Supplementary)

Same Side
Int. \angle s

Angles Between Parallel lines



Name an angle **interior** to the marked angle.

Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

Alternate angles are equal.

alt. \angle s

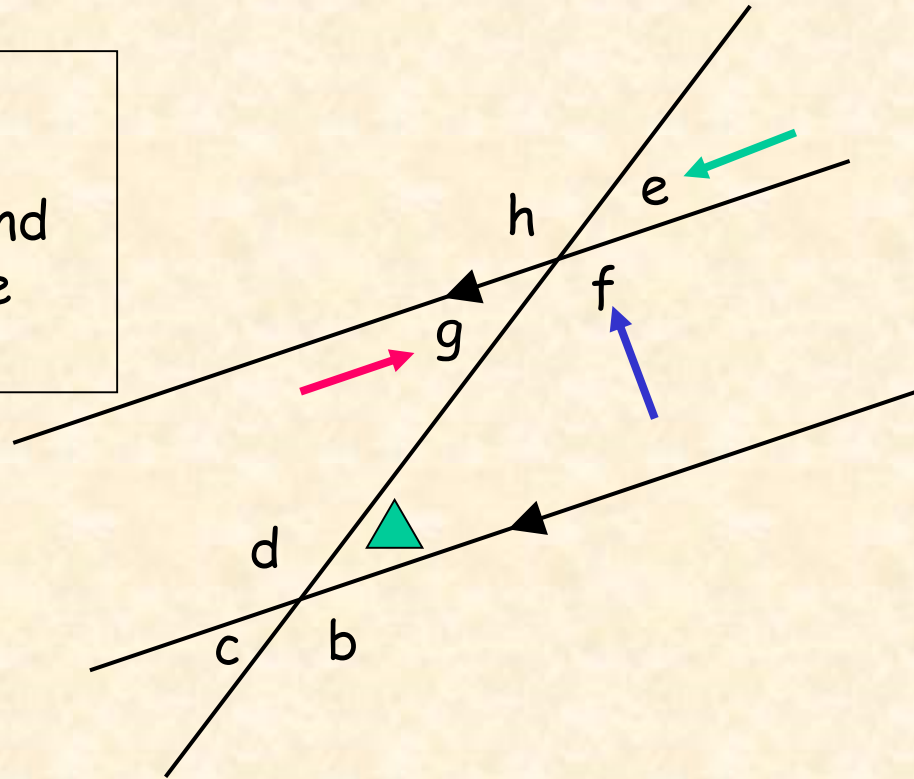
*

Same Side Interior angles sum to 180° .
(Supplementary)

Same Side
Int. \angle s

Angles Between Parallel lines

Name in order, the angles that are **alternate**, **interior** and **corresponding** to the marked angle.



Vertical angles are equal.

vert. \angle s

Corresponding angles are equal.

corr. \angle s

Alternate angles are equal.

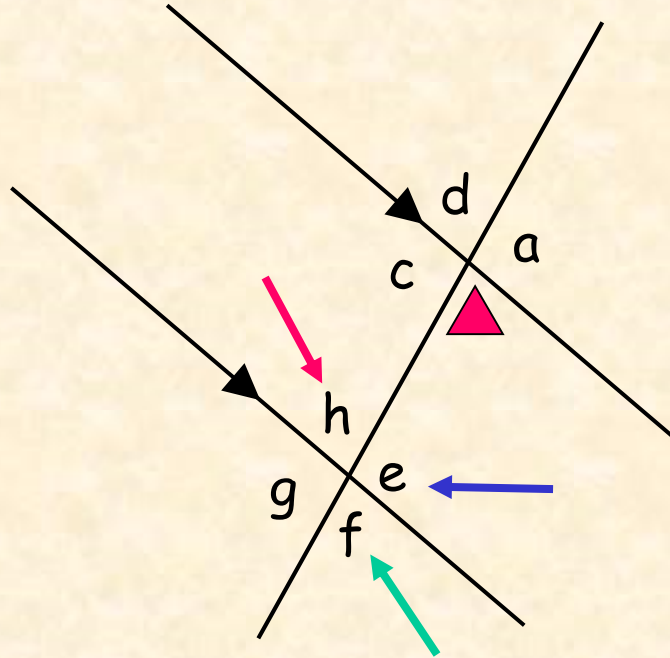
alt. \angle s

Same Side Interior angles sum to 180° .
(Supplementary)

Same Side
Int. \angle s

Angles Between Parallel lines

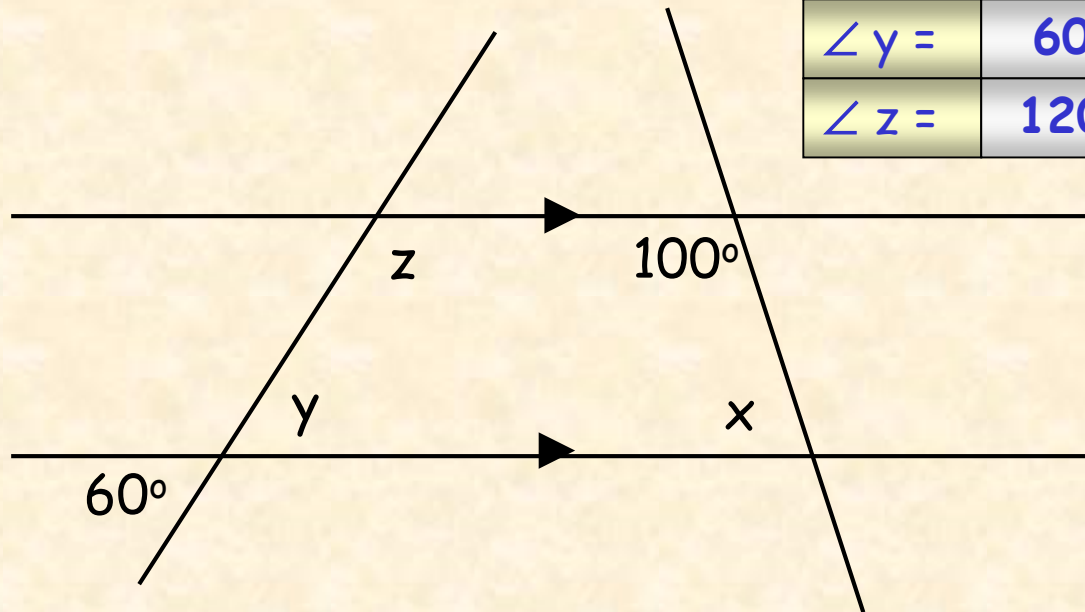
Name in order, the angles that are **alternate**, **interior** and **corresponding** to the marked angle.



Vertical angles are equal.	vert. \angle s
Corresponding angles are equal.	corr. \angle s
Alternate angles are equal.	alt. \angle s
Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

Finding unknown angles



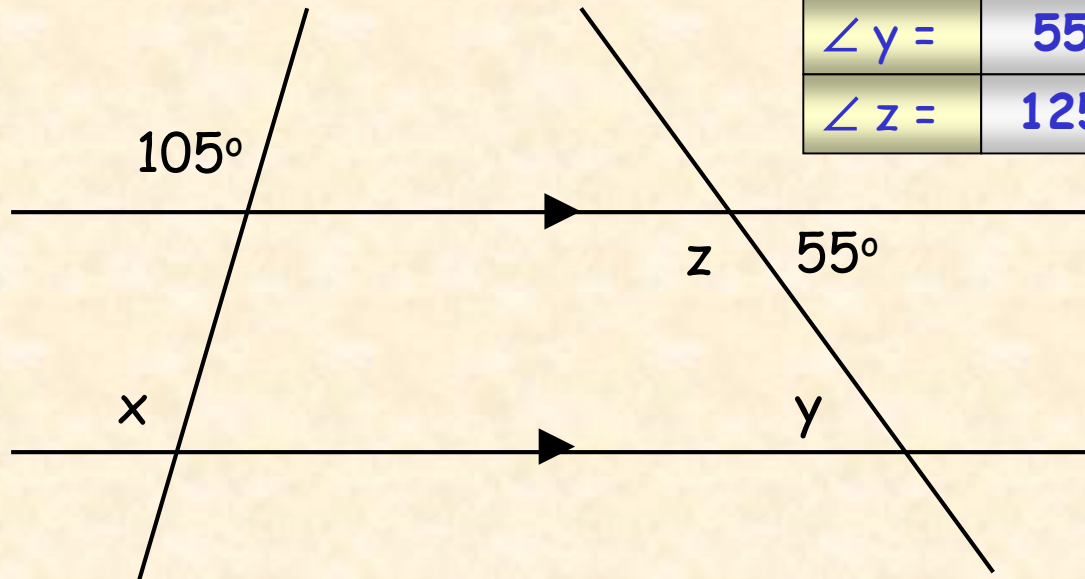
$\angle x =$	80°	Int. \angle s
$\angle y =$	60°	vert.opp. \angle s
$\angle z =$	120°	Int. \angle s

Find the unknown angles stating reasons, from the list below.

Vertical angles are equal.	vert. \angle s
Corresponding angles are equal.	corr. \angle s
Alternate angles are equal.	alt. \angle s
Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

Finding unknown angles



$\angle x =$	105°	corr. \angle s
$\angle y =$	55°	alt. \angle s
$\angle z =$	125°	Int. \angle s

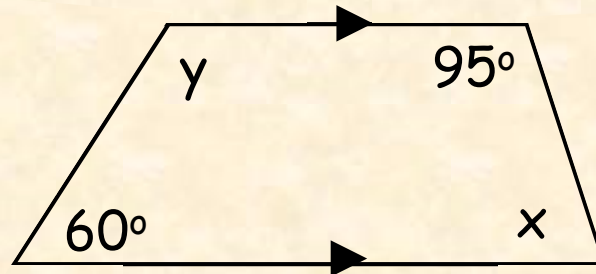
Find the unknown angles stating reasons, from the list below.

Vertical angles are equal.	vert. \angle s
Corresponding angles are equal.	corr. \angle s
Alternate angles are equal.	alt. \angle s
Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

Finding unknown angles

Unknown angles in quadrilaterals and other figures can be found using these properties.



$\angle x =$	85°	Int. \angle s
$\angle y =$	120°	Int. \angle s

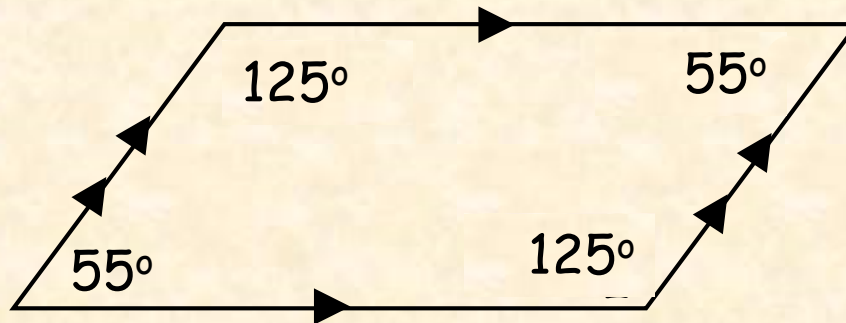
Find the unknown angles stating reasons, from the list below.

Vertical angles are equal.	vert. \angle s
Corresponding angles are equal.	corr. \angle s
Alternate angles are equal.	alt. \angle s
Same Side Interior angles sum to 180° (Supplementary)	Same Side Int. \angle s

Angles Between Parallel lines

Finding unknown angles

Unknown angles in quadrilaterals and other figures can be found using these properties.



$\angle x =$	125°	Int. \angle s
$\angle y =$	55°	Int. \angle s
$\angle z =$	125°	Int. \angle s

Find the unknown angles stating reasons, from the list below.

What does this tell you about parallelograms?

Vertical angles are equal.	vert. \angle s
Corresponding angles are equal.	corr. \angle s
Alternate angles are equal.	alt. \angle s
Same Side Interior angles sum to 180° . (Supplementary)	Same Side Int. \angle s

Example 1: Using the Corresponding Angles Postulate

Find each angle measure.

A. $m\angle ECF$

$$x = 70 \quad \text{Corr. } \angle\text{s Post.}$$

$$m\angle ECF = 70^\circ$$

B. $m\angle DCE$

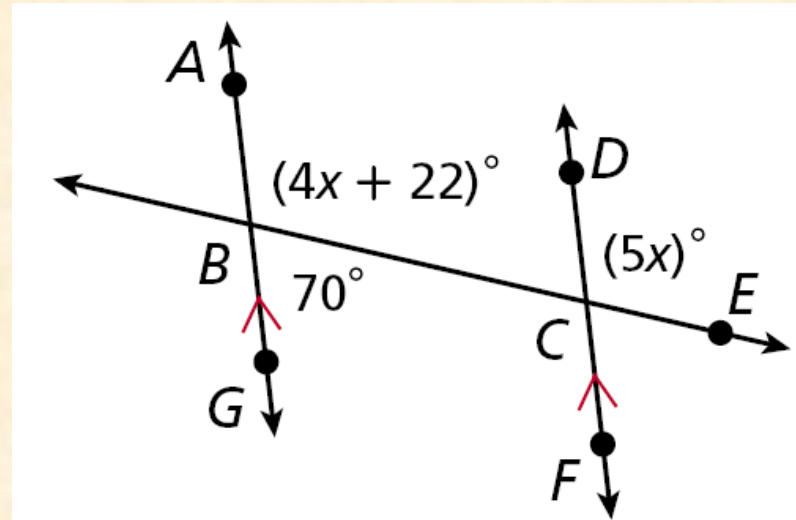
$$5x = 4x + 22 \quad \text{Corr. } \angle\text{s Post.}$$

$$x = 22 \quad \text{Subtract } 4x \text{ from both sides.}$$

$$m\angle DCE = 5x$$

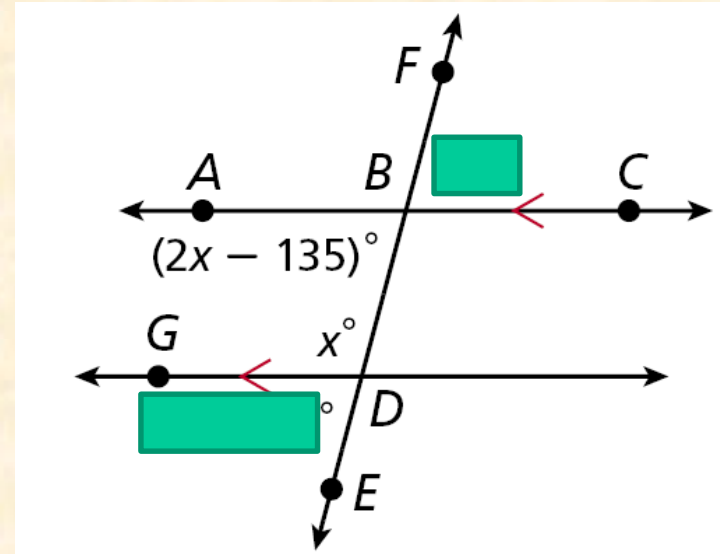
$$= 5(22) \quad \text{Substitute } 22 \text{ for } x.$$

$$= 110^\circ$$

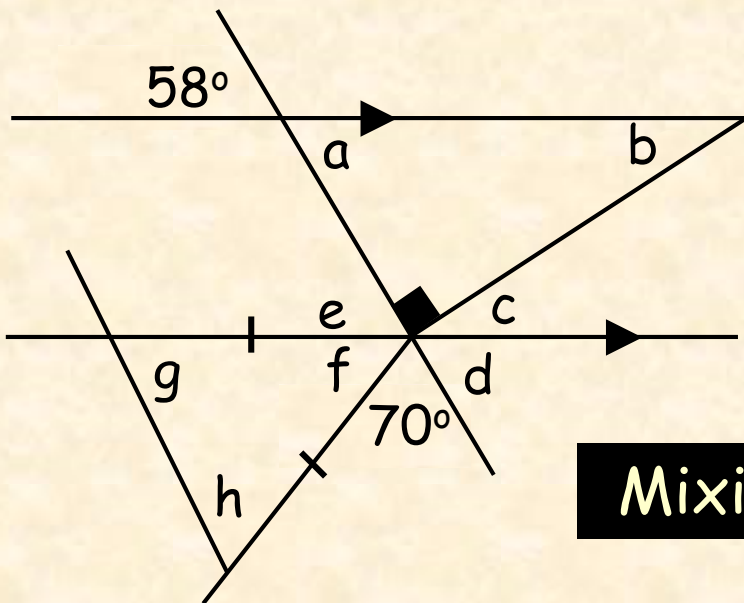


Example 2: Finding Angle Measures

Find the $m\angle BDG$.



Angles Between Parallel lines



Mixing it!

$\angle a =$	58°	vert.opp. $\angle s$
$\angle b =$	32°	$\angle s$ in tri
$\angle c =$	32°	alt. $\angle s$
$\angle d =$	58°	$\angle s$ on line
$\angle e =$	58°	corr. $\angle s$
$\angle f =$	52°	$\angle s$ at a point
$\angle g =$	64°	isos tri
$\angle h =$	64°	isos tri

Vertical angles are equal.	vert. $\angle s$
Corresponding angles are equal.	corr. $\angle s$
Alternate angles are equal.	alt. $\angle s$
S. S. Interior angles sum to 180° .(Supp)	Int. $\angle s$
Angle sum of a triangle (180°)	$\angle s$ in tri
Angle on a line sum to (180°)	$\angle s$ on line
Base angles isosceles triangle equal.	isos tri.
Angles at a point sum to 360°	$\angle s$ at point

Find the unknown angles stating reasons, from the list below. There may be more than one reason.

Solve the system using elimination.

$$\begin{cases} 6x - 5y = -16 \\ -12x + 4y = -16 \end{cases}$$

Example 2A: Solving Linear Systems by Elimination

Use elimination to solve the system of equations.

$$\begin{cases} 3x + 2y = 4 \\ 4x - 2y = -18 \end{cases}$$

Step 1 Find the value of one variable.

$$\begin{array}{r} 3x + 2y = 4 \\ + 4x - 2y = -18 \\ \hline 7x \quad = -14 \end{array}$$

$$x = -2$$

The y-terms have opposite coefficients.

Add the equations to eliminate y.

First part of the solution

Example 2A Continued

Step 2 Substitute the x -value into one of the original equations to solve for y .

$$3(-2) + 2y = 4$$

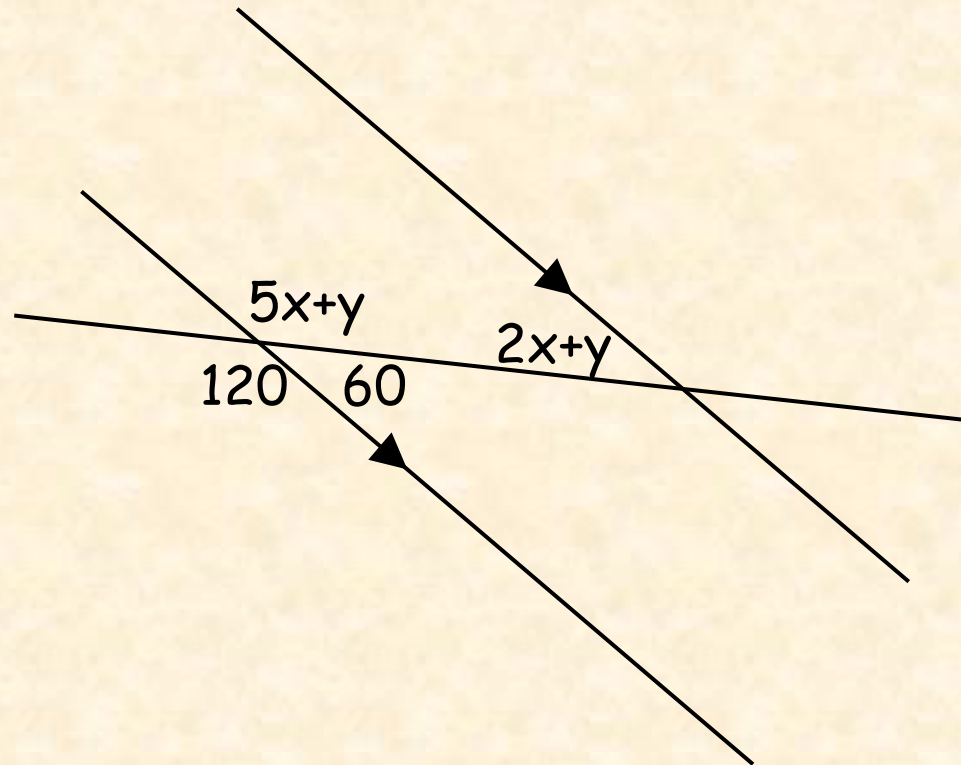
$$2y = 10$$

$$y = 5$$

Second part of the solution

The solution to the system is $(-2, 5)$.

Solving Systems of Equations



- | | |
|--|------------------------------|
| * Vertical angles are equal. | vert. \angle s |
| * Corresponding angles are equal. | corr. \angle s |
| * Alternate angles are equal. | alt. \angle s |
| * Same Side Interior angles sum to 180° .
(Supplementary) | Same Side
Int. \angle s |

Home Work!

Pg158 (1-12)