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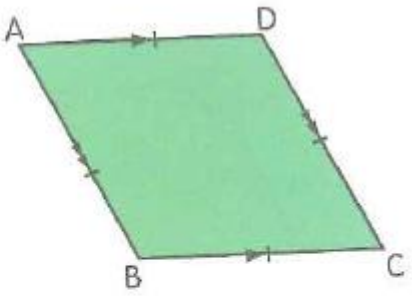
Year 5 - Properties of rhombuses and trapeziums lesson 1

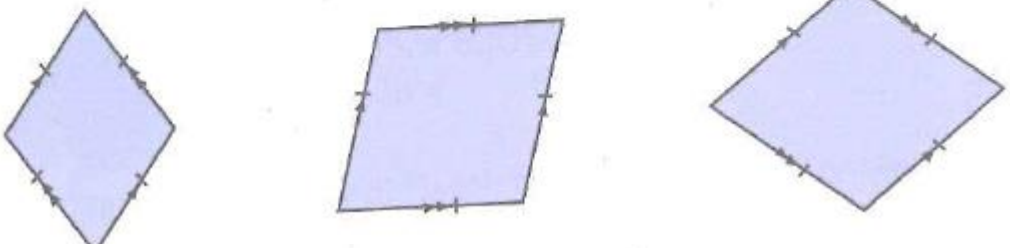
Rhombuses

8 In the shape ABCD, AB is parallel to DC, AD is parallel to BC and AB = BC = CD = DA.

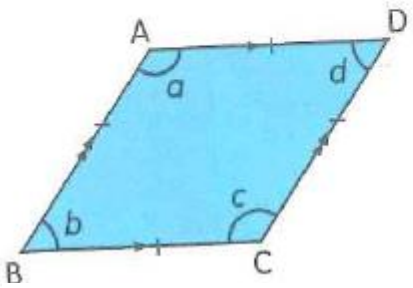


The shape ABCD is called a **rhombus**.

Here are three more examples of rhombuses.



9 A rhombus is a 4-sided shape in which the opposite sides are parallel and all four sides are equal.



I can think of a rhombus as a parallelogram with four equal sides.

So in the rhombus ABCD, $\angle a = \angle c$ and $\angle b = \angle d$.

Opposite angles of a rhombus are equal.

$\angle a + \angle b = 180°$ $\quad \angle a + \angle d = 180°$

$\angle c + \angle d = 180°$ $\quad \angle b + \angle c = 180°$

Each pair of angles between the parallel sides of a rhombus adds up to 180°.

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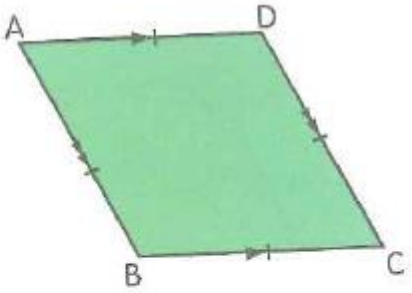
Year 5 - Properties of rhombuses and trapeziums lesson 1

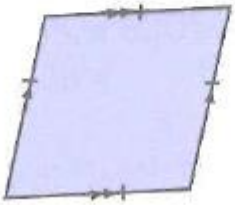
Rhombuses

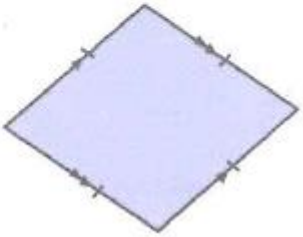
8 In the shape ABCD, AB is parallel to DC, AD is parallel to BC and AB = BC = CD = DA.



The shape ABCD is called a **rhombus**.

Here are three more examples of rhombuses.





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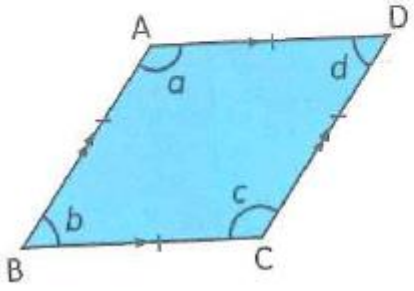
Year 5 - Properties of rhombuses and trapeziums lesson 1

9 A rhombus is a 4-sided shape in which the opposite sides are parallel and all four sides are equal.



I can think of a rhombus as a parallelogram with four equal sides.

So in the rhombus ABCD, $\angle a = \angle c$ and $\angle b = \angle d$.

Opposite angles of a rhombus are equal.

$\angle a + \angle b = 180°$ $\quad \angle a + \angle d = 180°$

$\angle c + \angle d = 180°$ $\quad \angle b + \angle c = 180°$

Each pair of angles between the parallel sides of a rhombus adds up to 180°.

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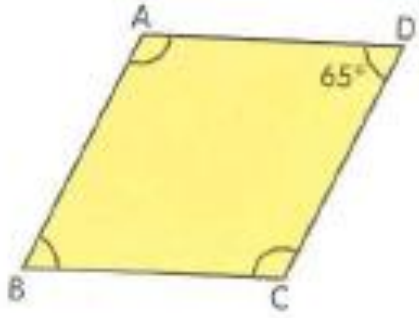
Year 5 - Properties of rhombuses and trapeziums lesson 1

10 We can use the properties of a rhombus to find the unknown angles.
In the rhombus ABCD:



$\angle ABC = \angle ADC$
$= 65°$

Opposite angles are equal.

$\angle BAD = 180° - 65°$
$= 115°$

$\angle BAD$ and $\angle ADC$ are angles between two parallel sides.

$\angle DCB = \angle BAD$
$= 115°$

$\angle DCB$ and $\angle BAD$ are opposite angles.

(i) $\angle ABC = \angle ADC = 65°$
(Opposite angles of a rhombus are equal)

(ii) $\angle BAD = 180° - 65° = 115°$
(Each pair of angles between two parallel sides of a rhombus adds up to 180°)

(iii) $\angle DCB = \angle BAD = 115°$
(Opposite angles of a rhombus are equal)

(iv) $\angle BCD = 180° - 65° = 115°$
(Each pair of angles between two parallel sides of a rhombus adds up to 180°)

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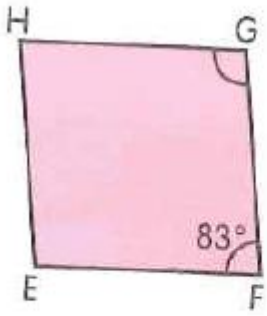
Year 5 - Properties of rhombuses and trapeziums lesson 1

11 The following rhombuses are not drawn to scale. Find the unknown marked angles.

a Find ∠FGH.



∠FGH = ☐° − ☐°

= ☐°

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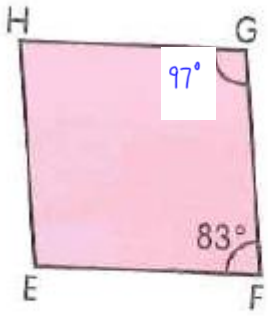
Year 5 - Properties of rhombuses and trapeziums lesson 1

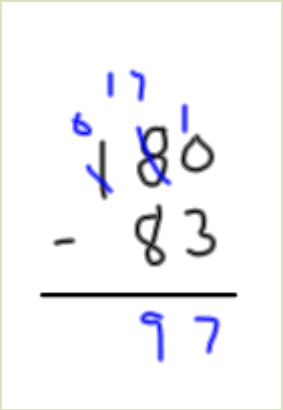
11 The following rhombuses are not drawn to scale. Find the unknown marked angles.

a Find ∠FGH.



∠FGH = 180° − 83°

= 97°



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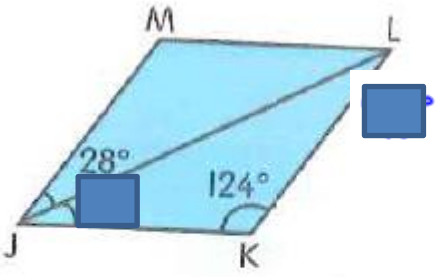
Year 5 - Properties of rhombuses and trapeziums lesson 1

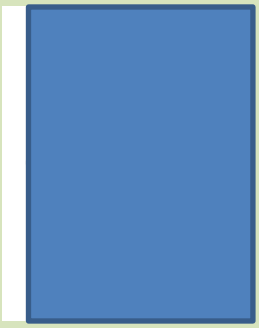
11 The following rhombuses are not drawn to scale. Find the unknown marked angles.

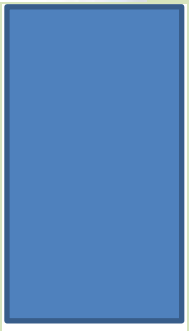
b Find ∠KJL.



∠KJM = 180° − 124° = 56°

∠KJL = 56° − 28° = 28°





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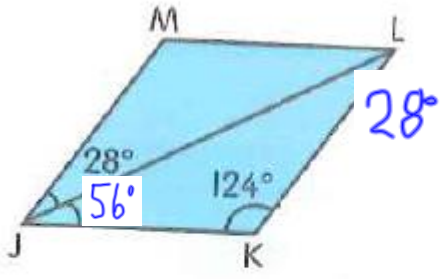
Year 5 - Properties of rhombuses and trapeziums lesson 1

11 The following rhombuses are not drawn to scale. Find the unknown marked angles.

b Find ∠KJL.



28°

∠KJM = 180° − 124° = 56°

∠KJL = 56° − 28° = 28°

$$\begin{array}{r} 1\,\overset{7}{8}\overset{1}{0} \\ -\,1\,2\,4 \\ \hline 5\,6 \end{array}$$

$$\begin{array}{r} \overset{4}{5}\,\overset{1}{6} \\ -\,2\,8 \\ \hline 2\,8 \end{array}$$

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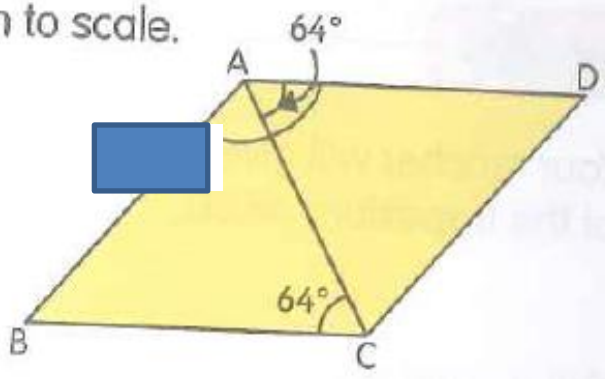
Year 5 - Properties of rhombuses and trapeziums lesson 1

The following rhombuses are not drawn to scale.

12 ABCD is a rhombus. Find ∠DAB.



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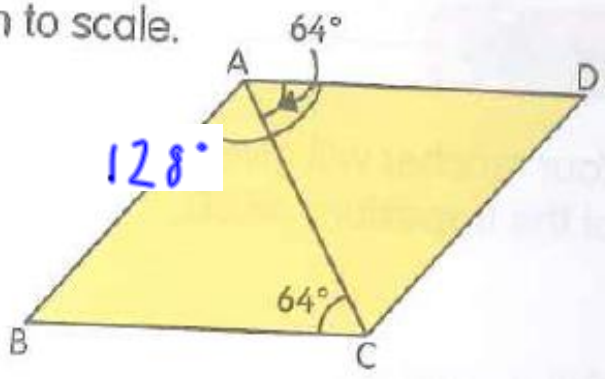
Year 5 - Properties of rhombuses and trapeziums lesson 1

The following rhombuses are not drawn to scale.

12 ABCD is a rhombus. Find ∠DAB.

∠DAB = 128°



$$\begin{array}{r} 64 \\ +\ 64 \\ \hline 128 \end{array}$$

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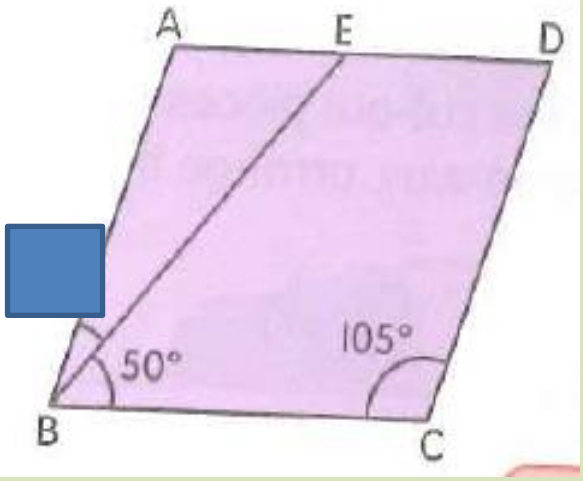
13 ABCD is a rhombus. Find ∠ABE.



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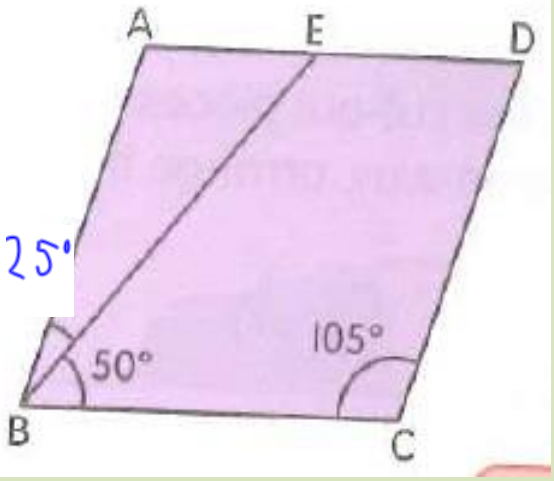
Year 5 - Properties of rhombuses and trapeziums lesson 1

13 ABCD is a rhombus. Find ∠ABE.

∠ABE = 25°



$$\begin{array}{r} 105 \\ +\ 50 \\ \hline 155 \end{array}$$

$$\begin{array}{r} 180 \\ -155 \\ \hline 25 \end{array}$$

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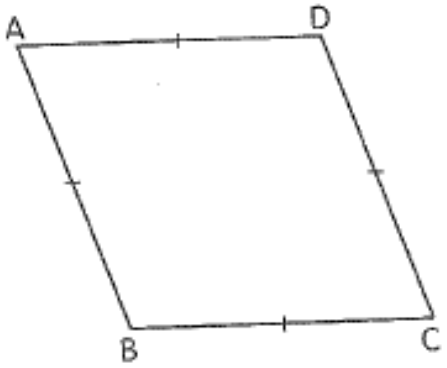
Year 5 – Properties of rhombuses and trapeziums lesson 1

Practice 6 Rhombuses

Mild

1 The shapes below are rhombuses. Fill in the spaces.

a

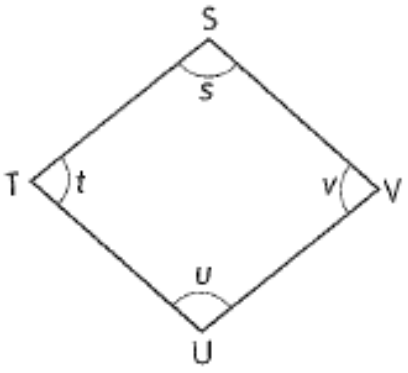


AB = BC = _____ = _____

∠ABC = ∠_____

∠DAB = ∠_____

b

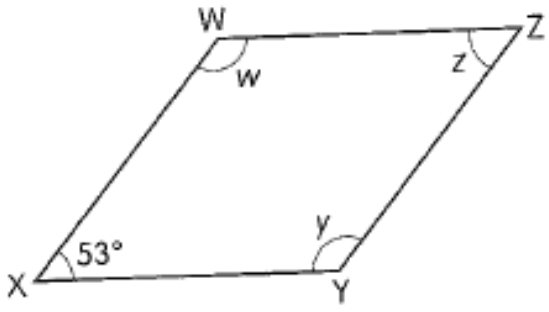


UV = _____ = _____ = _____

∠s = ∠_____

∠t = ∠_____

2 The following rhombus is not drawn to scale. Fill in the spaces.



∠z = ∠_____ = _____°

∠w = _____° – _____°

= _____°

∠y = ∠_____ = _____°

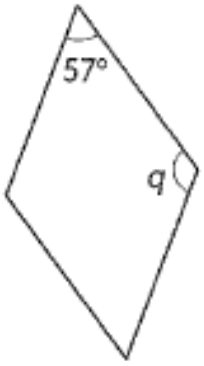
13.7.2020/16.7.2020

Year 5 - Properties of rhombuses and trapeziums lesson 1

3 The following rhombuses are not drawn to scale. Find the unknown marked angles.

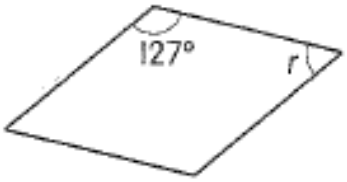
a

b

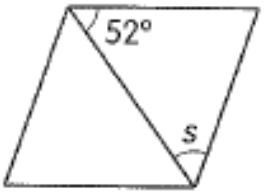


Spicy

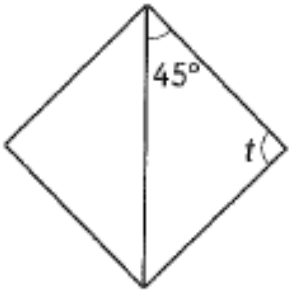
c



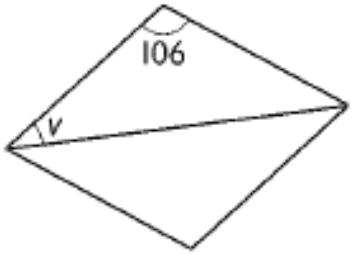
d



e



f



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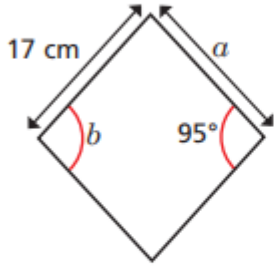
Year 5 - Properties of rhombuses and trapeziums lesson 1

3 These shapes are both rhombuses.

Find the unknown sides and angles.

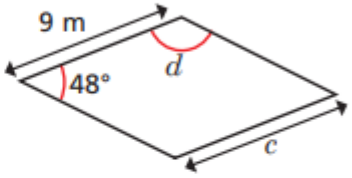
a)



$a =$ ☐ cm

$b =$ ☐ °

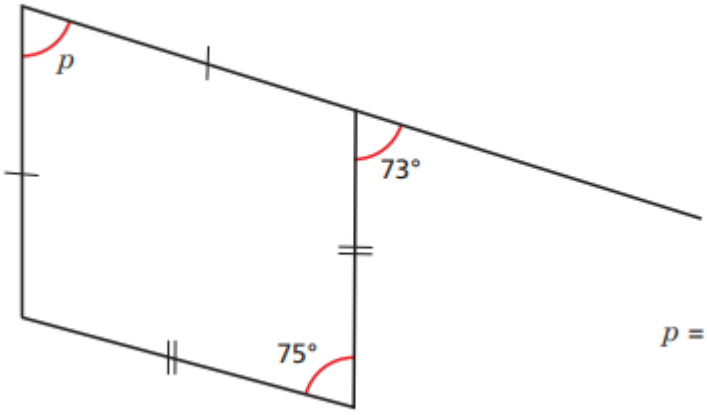
b)



$c =$ ☐ m

$d =$ ☐ °

7 Work out the size of angle p.



$p =$ ☐ °

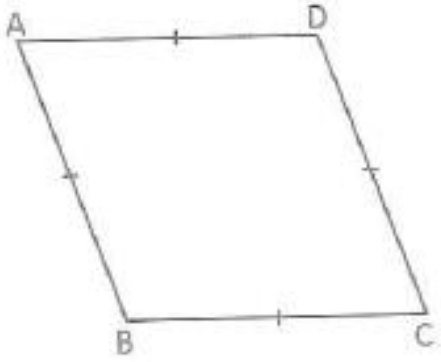
13.7.2020/16.7.2020

Year 5 – Properties of rhombuses and trapeziums lesson 1

Practice 6 Rhombuses

1 The shapes below are rhombuses. Fill in the spaces.

a

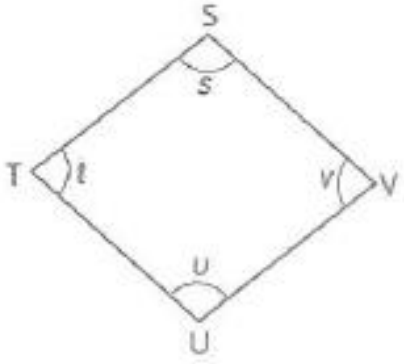


AB = BC = CD = AD

∠ABC = ∠ADC

∠DAB = ∠DCB

b

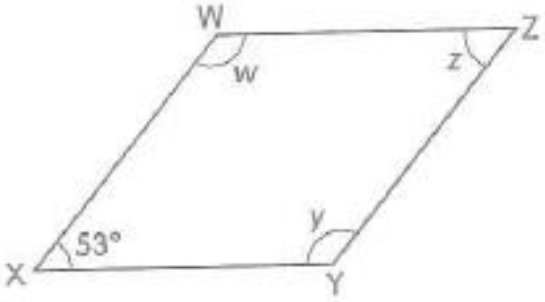


UV = UT = ST = SV

∠s = ∠U

∠t = ∠V

2 The following rhombus is not drawn to scale. Fill in the spaces.



∠z = ∠WXY = 53°

∠w = 180° − 53°

= 127°

∠y = ∠w = 127°

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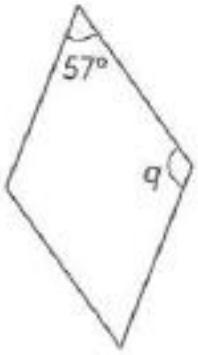
Year 5 - Properties of rhombuses and trapeziums lesson 1

3 The following rhombuses are not drawn to scale. Find the unknown marked angles.

a

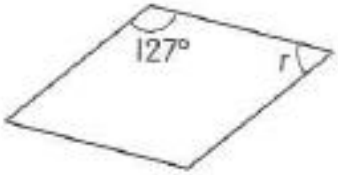
$\angle p = 125°$

b



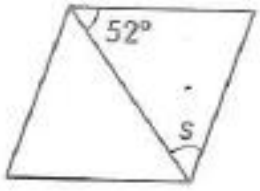
$\angle q = 180° - 57° = 123°$

c



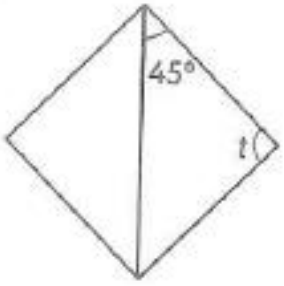
$\angle r = 180° - 127° = 53°$

d



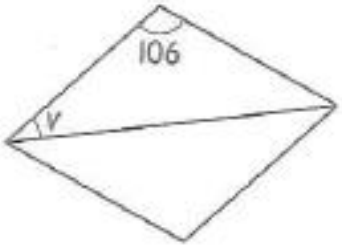
$\angle s = 52°$

e



$\angle t = 180° - 45° - 45°$
$= 90°$

f



$\angle v = (180° - 106°) \div 2$
$= 37°$