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Crossing Lines, Equal Opposites - Year 6

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Teacher Guide – Lessons 1-3

Purpose and preparation

Students identify two complete lines meeting at one vertex, distinguish opposite from adjacent angles, and justify unknowns using equality and a straight-line sum. Equipment: ruler, paper half-turn model, pencils. A protractor may check a drawing, but is not the deduction method. Display the R1 model and cut the 12 R4 cards before Lesson 3.

Lesson 1 – Identify intersecting straight lines (45-60 min)

Begin with two unlabelled crossings: ask which rays make complete straight lines and which angles share a vertex. Record each learner's first response. Model R1 and R2 cards 1–3 alone. Partners use two further cards to identify the two lines and a non-example. Check: each learner makes a genuine crossing and explains why three rays are insufficient.

Lesson 2 – Opposite or adjacent? (45-60 min)

Retrieve only the insecure prerequisite. Use R2 cards 1–6 to complete an opposite pair with a shared-ray adjacent pair, including a rotated crossing. Guide R3 page 1, then ask learners to label a changed diagram. Check: an opposite pair shares a vertex but not a ray, an adjacent pair shares a ray.

Lesson 3 – Why opposite angles are equal (45-60 min)

From R2 card 7, $x + z = 180^\circ$ and $y + z = 180^\circ$. The same z is subtracted from both, so $x = y$. Model one complete R4 turn and correct a wrong “looks equal” claim. Learners complete R3 page 2 and play all 12 R4 cards; partners give a reason on every turn. Observe explanations, not only answers.

Teacher Guide – Lessons 4-5

Lesson 4 – Find all four from one (45-60 min)

Use the fresh 68° R5 crossing. Name the relationship before calculating: opposite 68° , adjacent 112° and 112° . Learners complete R3 page 3 and R5 pages 1–2. Give a specific correction, then request a new explanation. The 117° wrong claim tests whether “next to” is confused with “opposite”. Check all four with an adjacent sum.

Lesson 5 – Explain rotated and relabelled cases (45-60 min)

Retrieve the success criteria without showing answers. Students independently complete R6: both differently oriented crossings, all four labels, one opposite pair, one adjacent pair, a reason for every deduction and a consistency check. Apply R7 to actual evidence and record a target and next teaching step.

Access and challenge

Support: use a paper half-turn and a partly labelled crossing when using the scaffold. Core: deduce unknowns with a named relationship and arithmetic. Extension: evaluate an invalid inference or chain two deductions within one crossing; do not assume unmarked parallel lines. Oral explanation or an accessible response mode is acceptable when the same mathematical evidence is clear.

Marking focus

Look for two complete straight lines, a shared vertex, opposite equality, adjacent sums of 180° , correct three-letter notation with the vertex in the middle, and a check. Assess the stated skill, not neatness or protractor precision. The final answer page supplies sample reasoning; accept equivalent valid names and explanations.

Teacher Guide – Game Key

R4 partner challenge key – cards 1-6

1. Opposite 38° : EQUAL. 2. Adjacent 124° : SUPPLEMENTARY ($56^\circ + 124^\circ = 180^\circ$). 3. Opposite 73° ; adjacent 107° . 4. Adjacent 55° ($180^\circ - 125^\circ$). 5. Around the crossing: 27° , 153° , 27° , 153° . 6. Opposite 91° ; adjacent 89° ; $91^\circ + 89^\circ = 180^\circ$. Require a named relationship for the reason point.

R4 partner challenge key – cards 7-12

7. Opposite 64° : EQUAL. 8. Adjacent 65° : SUPPLEMENTARY. 9. Around the crossing: 138° , 42° , 138° , 42° . 10. Opposite 45° ; adjacent 135° . 11. NEED MORE INFORMATION: three rays do not form two complete intersecting lines. 12. NEED MORE INFORMATION: angles at different vertices do not form vertically opposite. Do not infer equality across separate crossings.

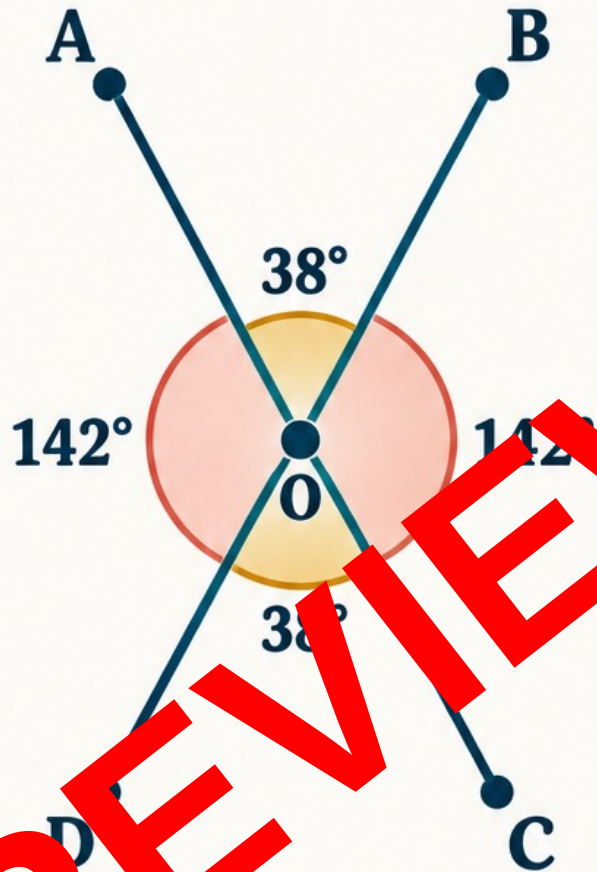
Quick checks and next steps

If a learner confuses adjacent and opposite, ask them to trace the shared ray. If they equate angles at different vertices, ask them to point to the single common vertex. If arithmetic is right without a reason, require “opposite angles are equal” or “adjacent angles on a straight line sum to 180° ”. A rotated picture does not change either relationship.

Resource order

Use R1 and R2 for explicit modelling; R3 for guided, core and transfer practice; R4 for purposeful partner talk; R5 for rehearsal and error repair; R6 for independent evidence; R7 for criterion-based judgement. Each worksheet and the assessment has its matching answer immediately after the student page in this Unit Plan.

Crossing Lines, Equal Opposites



Opposite angles are equal.

Adjacent angles share a ray and sum to 180° .

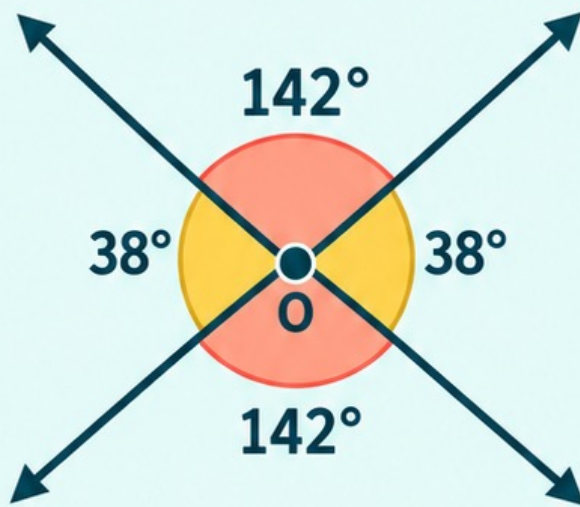
$$180^\circ - 38^\circ = 142^\circ.$$



38° and 142° are adjacent, not opposite.

Crossing Lines: Worked Cards 1–3

1

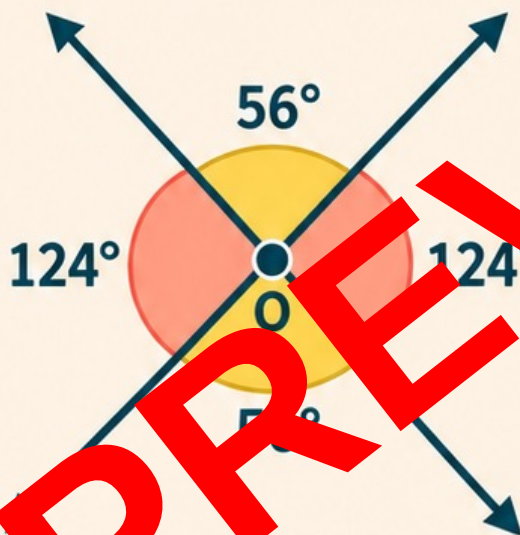


Opposite: 38° .

Adjacent:

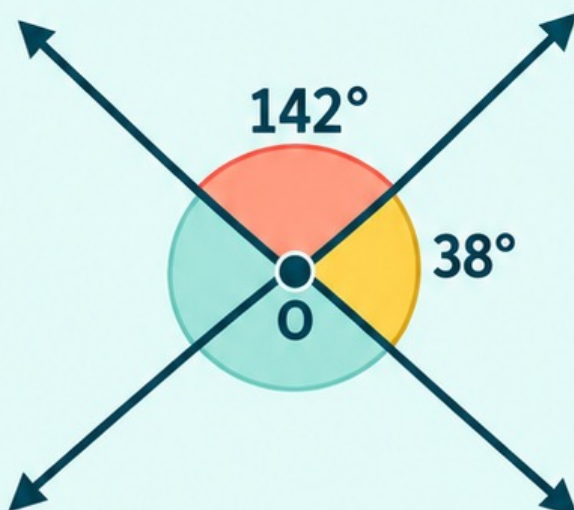
$$180^\circ - 38^\circ = 142^\circ.$$

2



Rotation does not change the relationship.

3



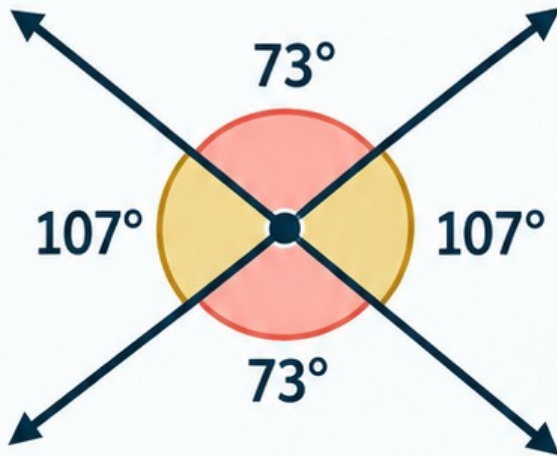
These are adjacent, not opposite.
Together they make a straight angle.



Crossing Lines: Worked Cards 4–6



4



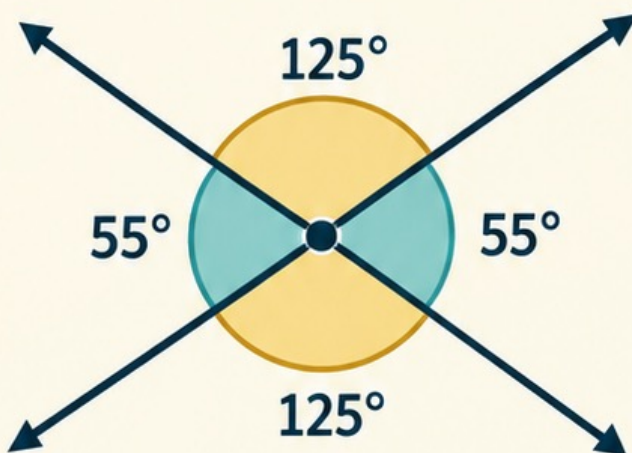
The opposite pair stays equal after rotation.

5



Three rays do not prove a vertically opposite pair.

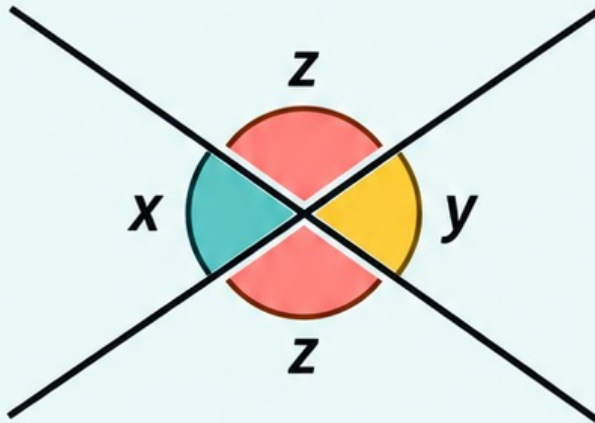
6



$$180^\circ - 125^\circ = 55^\circ.$$

Crossing Lines: Worked Cards 7–9

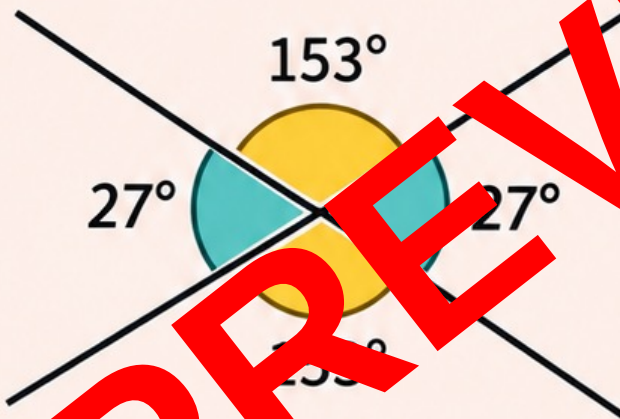
7



$$x + z = 180^\circ \text{ and}$$
$$y + z = 180^\circ.$$

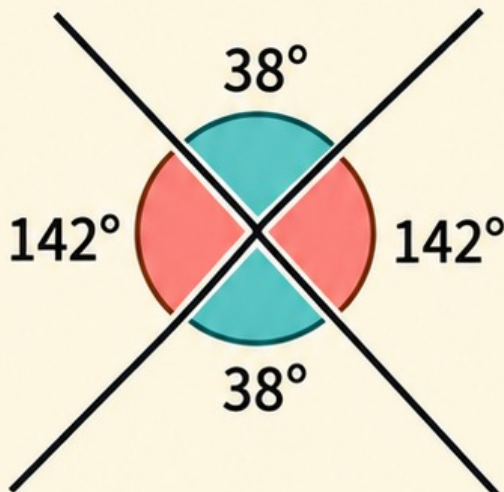
Therefore $x = y$.

8



$$180^\circ - 27^\circ = 153^\circ.$$

9



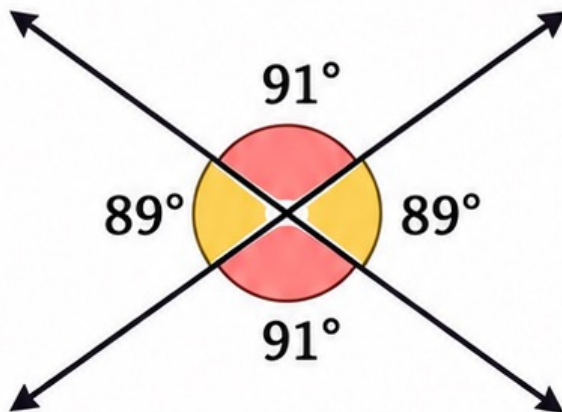
Rotation changes
the picture, not the facts.



Crossing Lines: Worked Cards 10–12

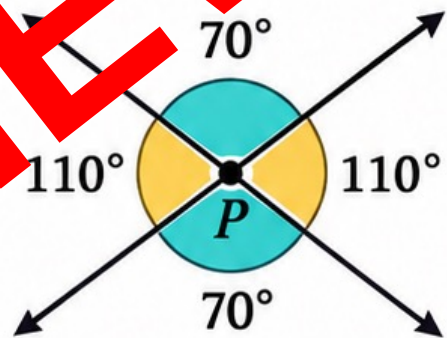
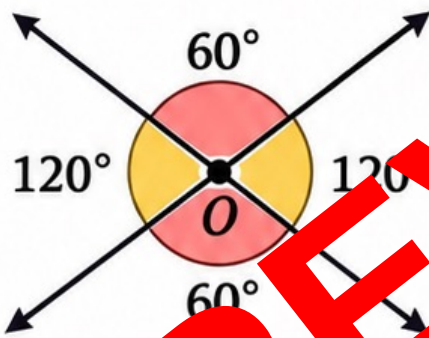


10



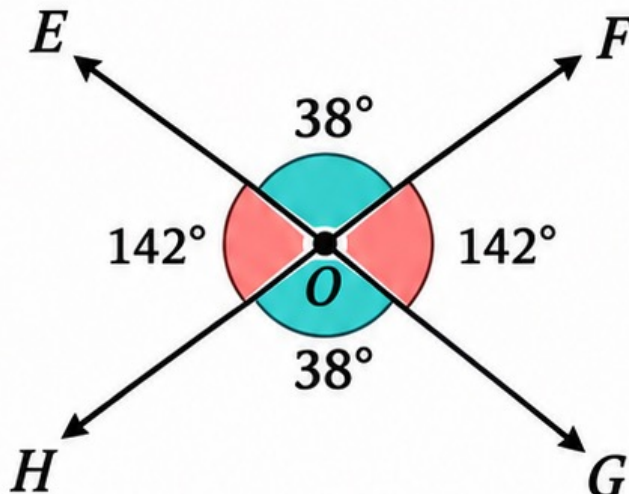
$$91^\circ + 89^\circ = 180^\circ.$$

11



Angles at different vertices are not a vertically opposite pair.

12



Name the vertex
in the middle:

$$\angle EOF = 38^\circ.$$

Name: _____

Date: _____

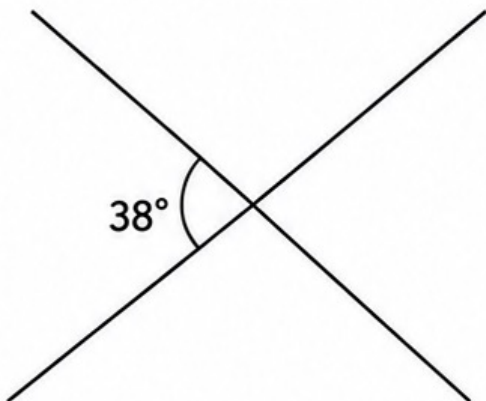
Opposite or Adjacent? — Guided Practice

Use the diagrams to answer the questions. Show your working in the space provided.

1. Mark the opposite angle.

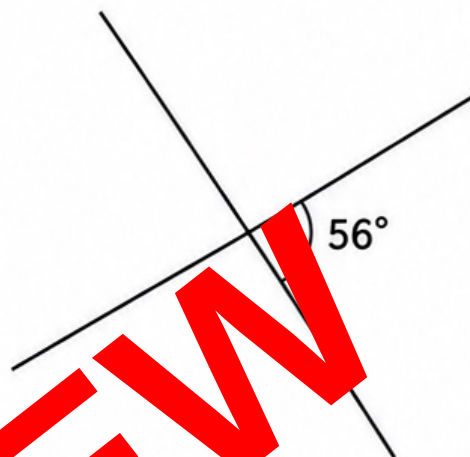
What is its size?

Why?



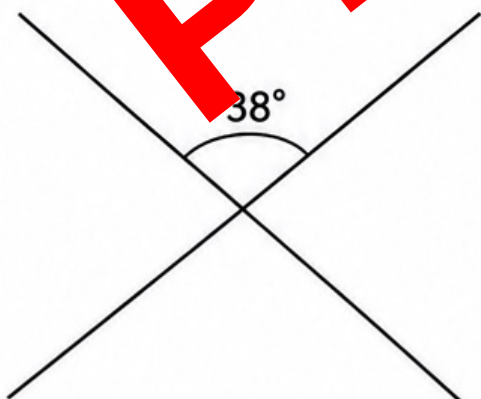
2. Mark one adjacent angle.

Calculate it and name the relationship.



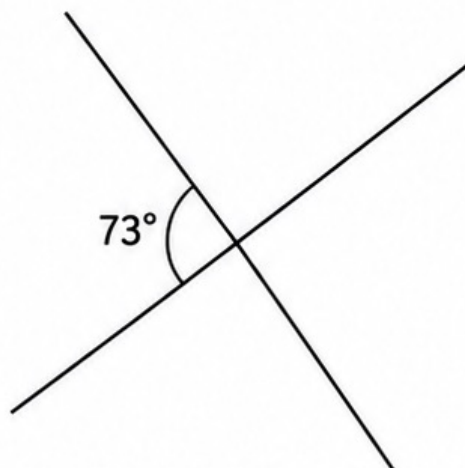
3. Circle an adjacent pair and cross out an opposite pair.

How can you tell?



4. Find the other three angles.

Show one straight-line sum.



Name: _____

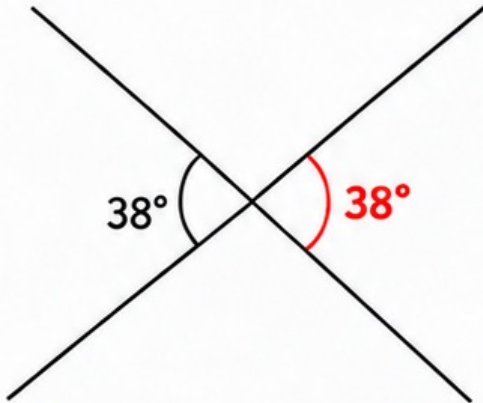
ANSWERS

Date: _____

Opposite or Adjacent? — Guided Practice

Use the diagrams to answer the questions. Show your working in the space provided.

1. Mark the opposite angle.
What is its size?
Why?



The opposite angle is 38° .

Vertically opposite angles are equal.

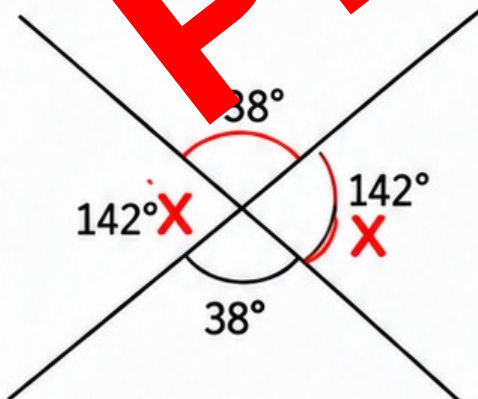
2. Mark one adjacent angle.
Calculate it and name the relationship.



An adjacent angle is 124° .

$56^\circ + 124^\circ = 180^\circ$ (angles on a straight line).

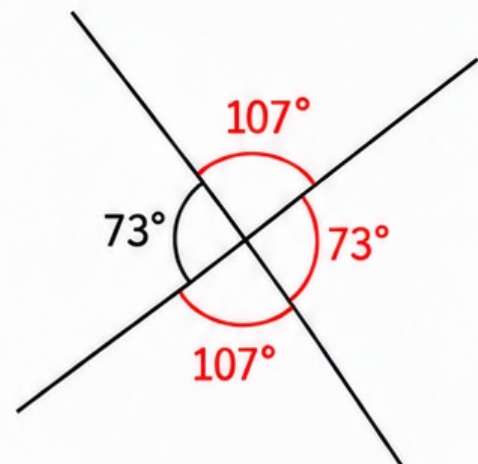
3. Circle an adjacent pair and cross out an opposite pair.
How can you tell?



Adjacent angles share a ray.

Opposite angles do not share a ray.

4. Find the other three angles.
Show one straight-line sum.



The other three angles are 73° , 107° and 107° .

$73^\circ + 107^\circ = 180^\circ$.

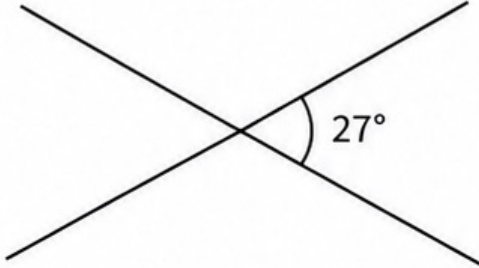
Name: _____

Date: _____

Opposite or Adjacent? — Core Practice

Each diagram shows two straight lines that cross at a point. Use the given angle to find the opposite angle and an adjacent angle. Write the values and a brief reason for each.

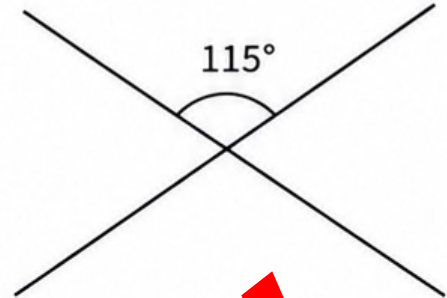
1.



Opposite: _____ Adjacent: _____

Reason: _____

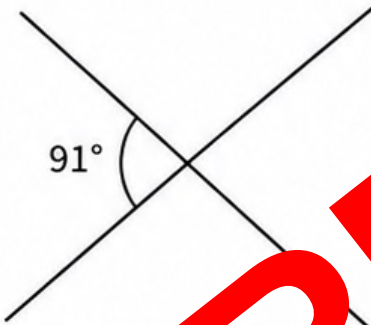
2.



Opposite: _____ Adjacent: _____

Reason: _____

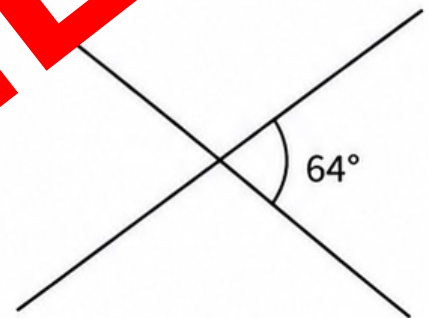
3.



Opposite: _____ Adjacent: _____

Reason: _____

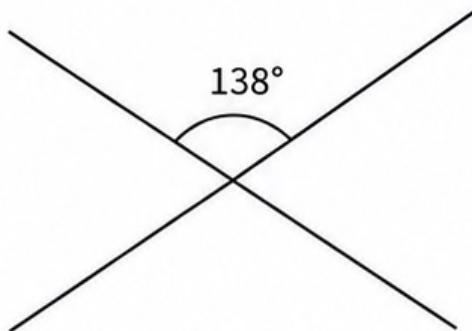
4.



Opposite: _____ Adjacent: _____

Reason: _____

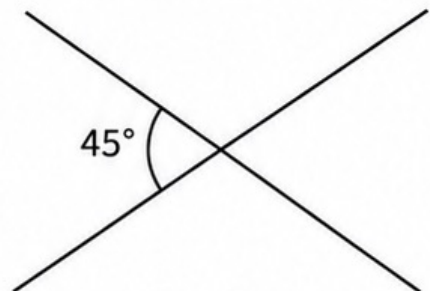
5.



Opposite: _____ Adjacent: _____

Reason: _____

6.



Opposite: _____ Adjacent: _____

Reason: _____

Name: _____

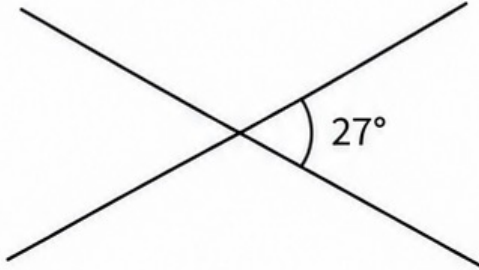
ANSWERS

Date: _____

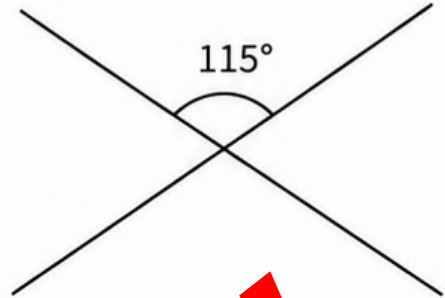
Opposite or Adjacent? — Core Practice

Each diagram shows two straight lines that cross at a point. Use the given angle to find the opposite angle and an adjacent angle. Write the values and a brief reason for each.

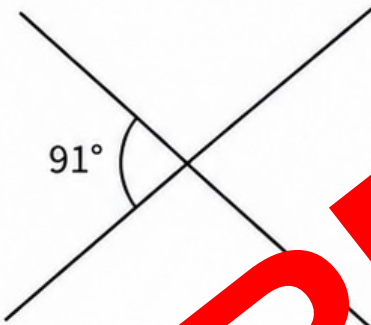
1.

Opposite: 27° Adjacent: 153°Reason: Opposite equal; adjacent sum 180°.

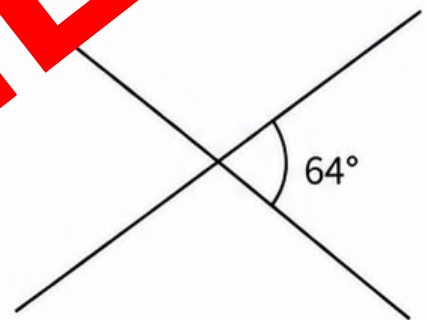
2.

Opposite: 115° Adjacent: 65°Reason: Opposite equal; adjacent sum 180°.

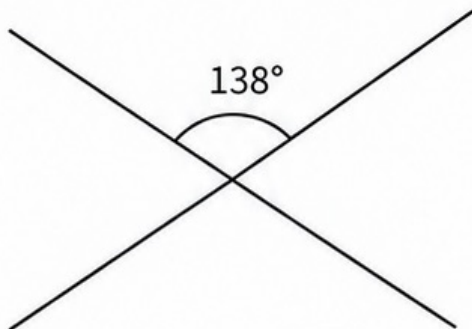
3.

Opposite: 89° Adjacent: 89°Reason: Opposite equal; adjacent sum 180°.

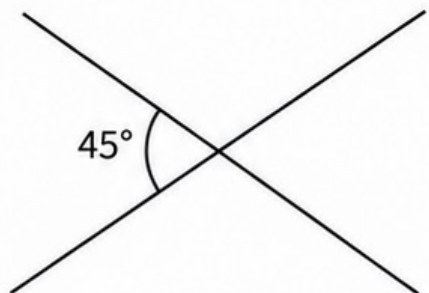
4.

Opposite: 64° Adjacent: 116°Reason: Opposite equal; adjacent sum 180°.

5.

Opposite: 138° Adjacent: 42°Reason: Opposite equal; adjacent sum 180°.

6.

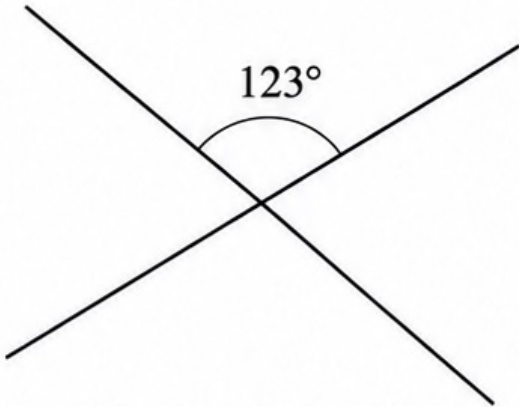
Opposite: 45° Adjacent: 135°Reason: Opposite equal; adjacent sum 180°.

Name: _____

Date: _____

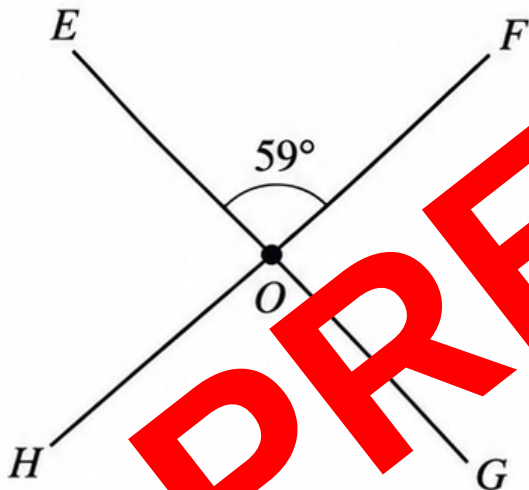
Opposite or Adjacent? — Transfer

1.



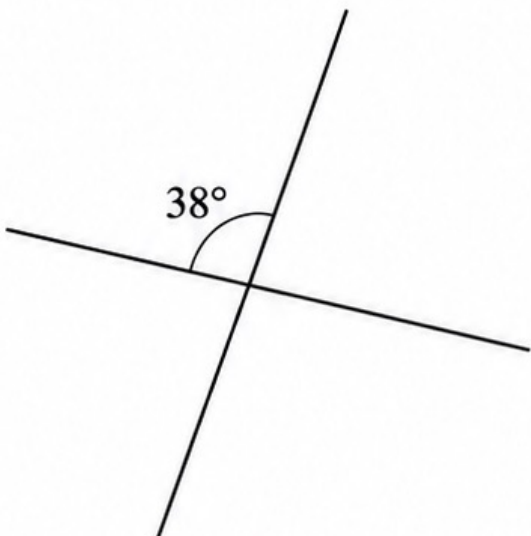
Find all four angles. Explain one opposite pair and one adjacent pair.

2.



Find all four angles. Use the vertex letter correctly in your explanation.

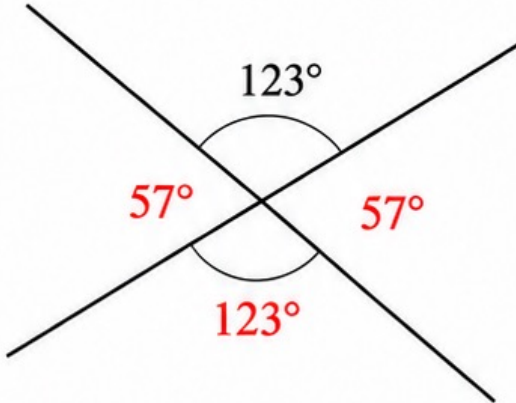
3.



Find all four angles. Check a straight-line sum.

Opposite or Adjacent? — Transfer

1.

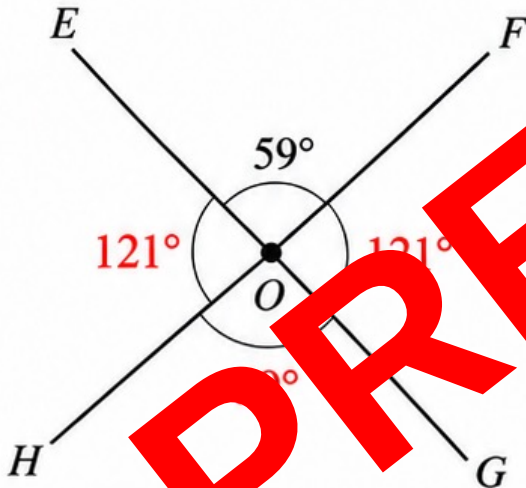


Find all four angles. Explain one opposite pair and one adjacent pair.

Opposite angles are equal, so the angle opposite 123° is also 123° .

The adjacent angles are 57° because $123^\circ + 57^\circ = 180^\circ$.

2.



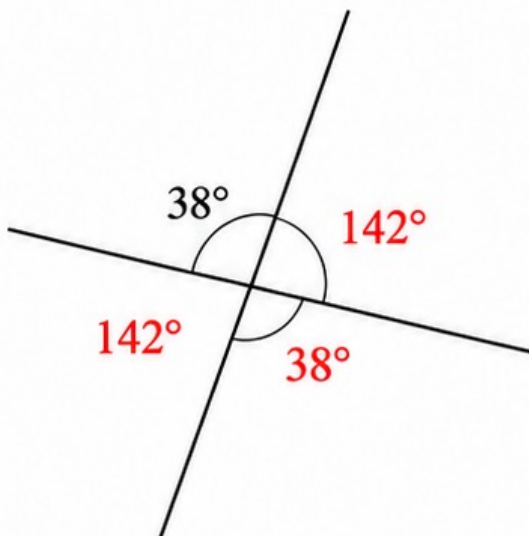
Find all four angles. Use the vertex letter correctly in your explanation.

$\angle GOH = 59^\circ$ (opposite $\angle EOF$).

$\angle FOG = 121^\circ$ and $\angle HOE = 121^\circ$ (adjacent).

O is the middle letter, and $59^\circ + 121^\circ = 180^\circ$.

3.



Find all four angles. Check a straight-line sum.

The angle opposite 38° is 38° .

The adjacent angles are 142° each.

Check: $38^\circ + 142^\circ = 180^\circ$.

Equal or Supplementary?

— Partner Challenge —

Look at the angles. Think. Explain. Score!

You need:



12 challenge cards



paper



pencil



and the check key.

How to play:

- 1 Take turns.
- 2 Read a card, identify the angle pair, say **EQUAL**, **SUPPLEMENTARY**, or **NEED MORE INFORMATION**, then give a reason.
- 3 Your partner checks the key. Switch cards after every card.

Key facts:

For two complete lines crossing:

- opposite angles are equal;
- adjacent angles make 180° .

Remember:
these facts only
apply when two complete
straight lines cross
at a point.

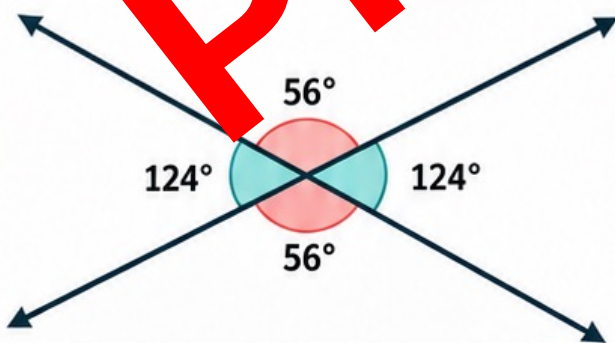
Scoring and winning:

Score 1 point for the correct choice and 1 point for a valid reason.

Stop after all 12 cards; highest score wins.



Worked example:



Two complete straight lines cross.

- The angle opposite 56° is 56° . So this pair is **EQUAL** (opposite angles are equal).
- An adjacent angle is 124° . So this pair is **SUPPLEMENTARY** (because $56^\circ + 124^\circ = 180^\circ$).

Important!



A pair at different vertices is **not** vertically opposite.

Angles
make sense
together!



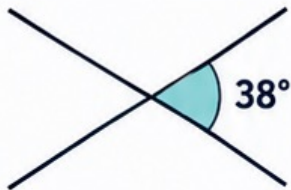
Equal or Supplementary? – Cards 1–6



1

Two complete straight lines cross at one point.

One angle is 38° .
Find its opposite.
Equal or supplementary?

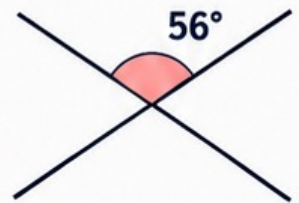


My answer and reason:

2

Two complete straight lines cross at one point.

One angle is 56° .
Find an adjacent angle.
Equal or supplementary?

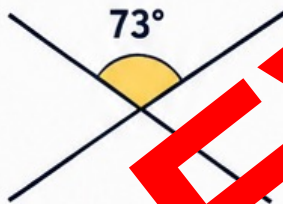


My answer and reason:

3

Two complete straight lines cross at one point.

One angle is 73° .
Find its opposite
and one adjacent
angle.

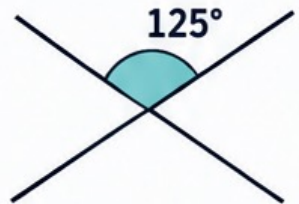


My answer and reason:

4

Two complete straight lines cross at one point.

One angle is 125° .
Find one adjacent
angle.

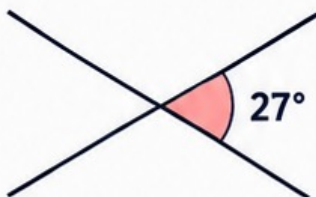


My answer and reason:

5

Two complete straight lines cross at one point.

One angle is 27° .
Find all four
angles.

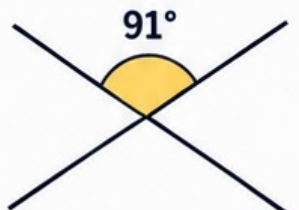


My answer and reason:

6

Two complete straight lines cross at one point.

One angle is 91° .
Compare opposite
and adjacent pairs.



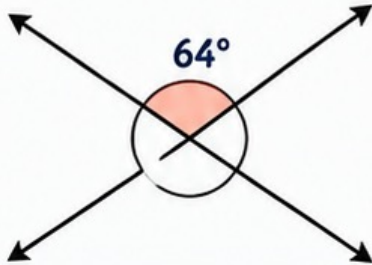
My answer and reason:

PREVIEW

Equal or Supplementary? – Cards 7–12

7

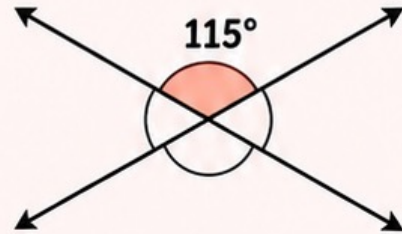
Two complete straight lines cross.
One angle is 64° .
Find its opposite.



Answer: _____

8

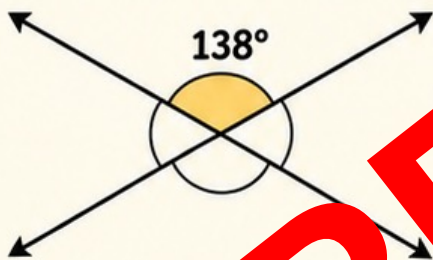
Two complete straight lines cross.
One angle is 115° .
Find one adjacent angle.



Answer: _____

9

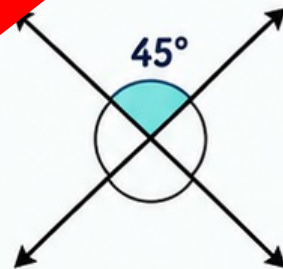
Two complete straight lines cross.
One angle is 138° .
Find all four angles.



Answer: _____

10

Two complete straight lines cross.
One angle is 45° .
Compare opposite and adjacent pairs.

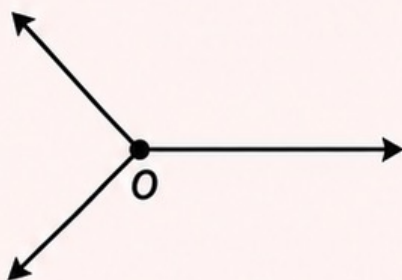


Answer: _____

Reason: _____

11

Only three rays meet at O.
Can you infer a vertically opposite angle? Explain.

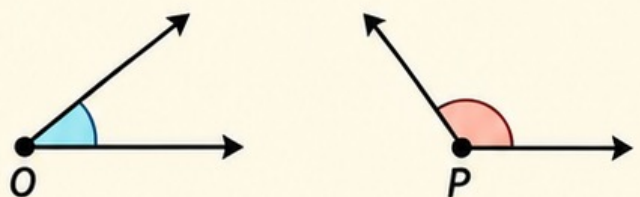


Answer: _____

Reason: _____

12

Angles are at two different vertices O and P.
Are they vertically opposite? Explain.



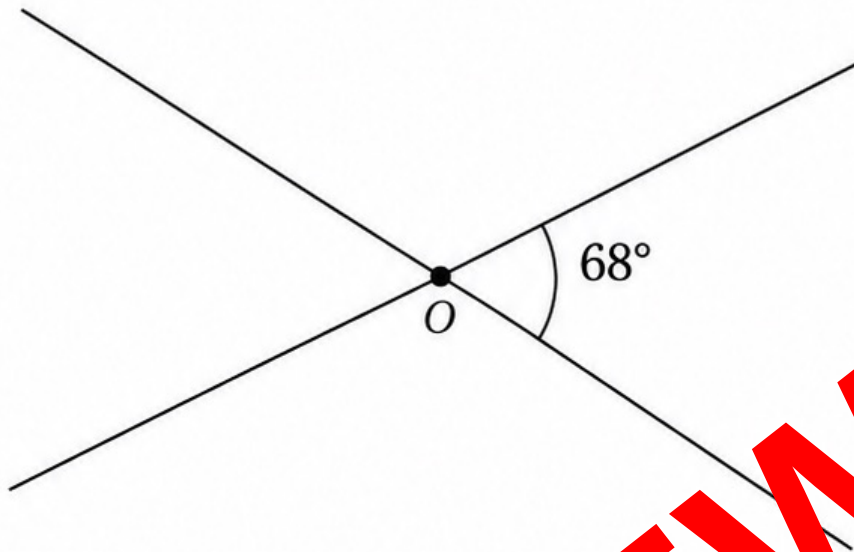
Answer: _____

Reason: _____

Name: _____

Date: _____

All Four Angles – Rehearsal 1



1. Label all four angles around O.

2. Which angle is opposite to the 68° angle? Explain why.

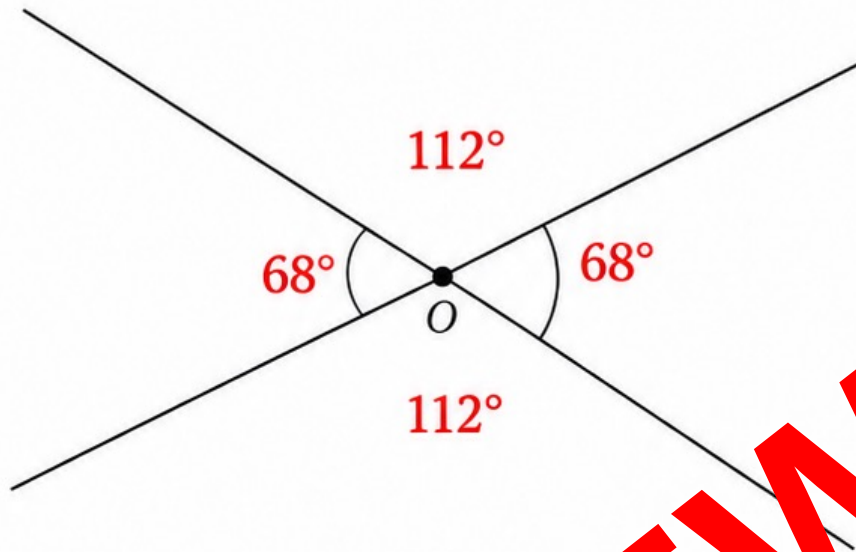
3. Find one adjacent angle. Show the straight-line calculation.

4. Check all four by adding two adjacent pairs.

Name: **ANSWERS**

Date: _____

All Four Angles – Rehearsal 1



1. Label all four angles around O.

$68^\circ, 112^\circ, 68^\circ, 112^\circ$

2. Which angle is opposite the 68° angle? Explain why.

The angle directly across is 68° because vertically opposite angles from two intersecting straight lines are equal.

3. Find one adjacent angle. Show the straight-line calculation.

An adjacent angle is 112° because $180^\circ - 68^\circ = 112^\circ$.

4. Check all four by adding two adjacent pairs.

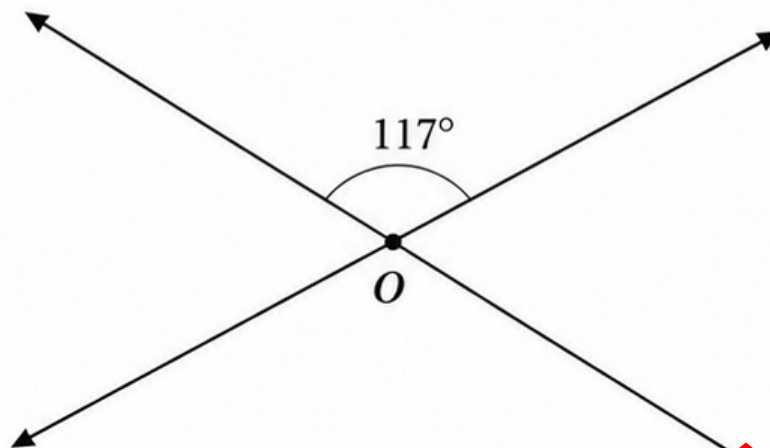
$$68^\circ + 112^\circ = 180^\circ$$

$$112^\circ + 68^\circ = 180^\circ$$

All Four Angles — Rehearsal 2

Name: _____

Date: _____



The angle next to 117° is also 117° because it is opposite.

1. What is wrong with the statement?

2. Find the actual adjacent angle and justify it.

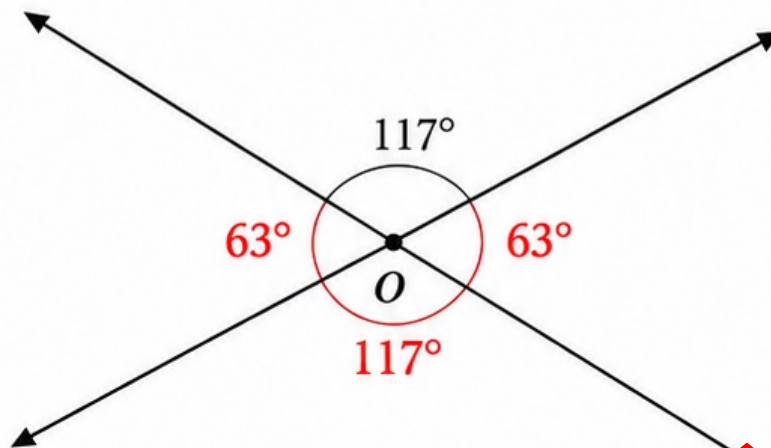
3. Label all four angles and make a consistency check.

All Four Angles — Rehearsal 2

Name: _____

ANSWERS

Date: _____



The angle next to 117° is also 117° because it is opposite.

1. What is wrong with the statement?

“Next to” means adjacent, not opposite.

The statement confuses the two relationships.

2. Find the actual adjacent angle and justify it.

$180^\circ - 117^\circ = 63^\circ$ because adjacent angles on a straight line sum to 180° .

3. Label all four angles and make a consistency check.

The angles around O are $117^\circ, 63^\circ, 117^\circ, 63^\circ$.

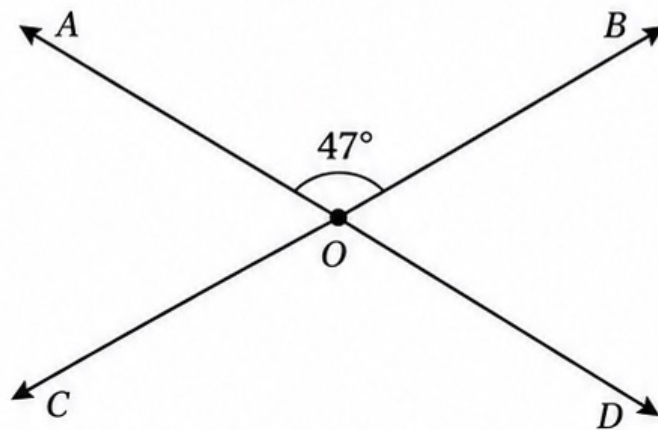
Check: $117^\circ + 63^\circ = 180^\circ$.

Crossing Lines – Independent Assessment

Name: _____

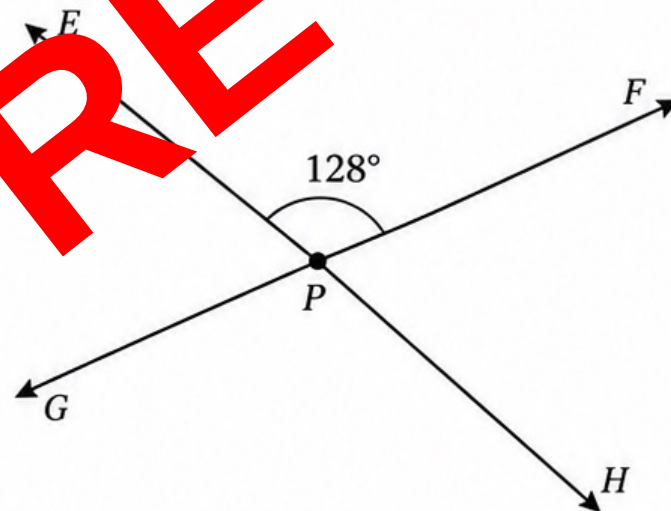
Date: _____

A.



Label all four angles. Name one opposite pair and one adjacent pair. Give a reason for every deduction. Check a straight-line sum.

B.



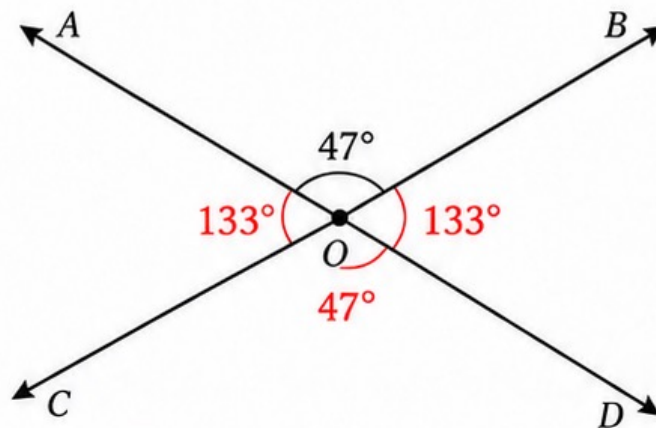
Label all four angles. Name one opposite pair and one adjacent pair. Give a reason for every deduction. Check a straight-line sum.

Crossing Lines – Independent Assessment

Name: ANSWERS

Date: _____

A.



Label all four angles. Name one opposite pair and one adjacent pair. Give a reason for every deduction. Check a straight-line sum.

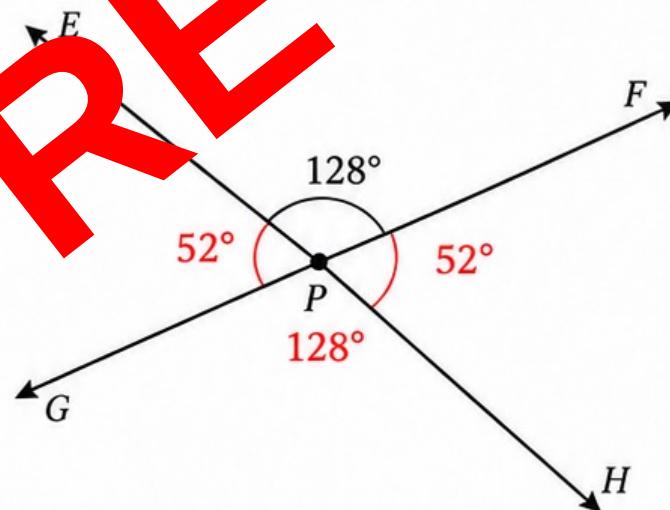
$\angle AOB = 47^\circ$ (given), $\angle BOD = 133^\circ$ ($180^\circ - 47^\circ = 133^\circ$), $\angle COD = 47^\circ$ (opposite),
 $\angle AOC = 133^\circ$ ($180^\circ - 47^\circ = 133^\circ$).

Opposite pair: $\angle AOB$ and $\angle COD$ (vertically opposite angles are equal).

Adjacent pair: $\angle AOB$ and $\angle BOD$ (adjacent angles on a straight line).

Check: $47^\circ + 133^\circ = 180^\circ$.

B.



Label all four angles. Name one opposite pair and one adjacent pair. Give a reason for every deduction. Check a straight-line sum.

$\angle EPF = 128^\circ$ (given), $\angle FPH = 52^\circ$ ($180^\circ - 128^\circ = 52^\circ$), $\angle GPH = 128^\circ$ (opposite),
 $\angle EPG = 52^\circ$ ($180^\circ - 128^\circ = 52^\circ$).

Opposite pair: $\angle EPF$ and $\angle GPH$ (vertically opposite angles are equal).

Adjacent pair: $\angle EPF$ and $\angle FPH$ (adjacent angles on a straight line).

Check: $128^\circ + 52^\circ = 180^\circ$.

Accept equivalent correct angle names and valid reasons.

Crossing Lines – Learning Evidence Rubric

	Needs teaching	Developing with support	Target met independently
Concept / accuracy	Shows an inaccurate relation between angles at a crossing.	Uses a familiar model to identify the correct relation with a prompt.	Identifies the correct relation for a fresh crossing.
Application / procedure	Task is incomplete or contains errors in labelling.	Labels angles correctly using a model with support.	Labels angles and checks both crossings independently.
Reason / evidence	Provides a guess only with no supporting evidence.	Gives some relevant detail to support a deduction with a prompt.	Gives a valid reason for every deduction.
Transfer / communication	Response is unclear or is confused by a rotation of the crossing.	Gives a clear response with support.	Provides a coherent explanation across differently oriented crossings.

Observed evidence:

Next teaching step:

Crossing Lines, Equal Opposites



Purpose and success

Identify opposite and adjacent pairs

Use a named relationship to find all four angles

Check each answer with the straight-line sum.

First: which rays form complete lines?



Angle language

A straight angle is 180° .

Adjacent angles share a vertex and a ray.

Vertically opposite angles are across a vertex.

In $\angle AOB$, O is the vertex in the middle.



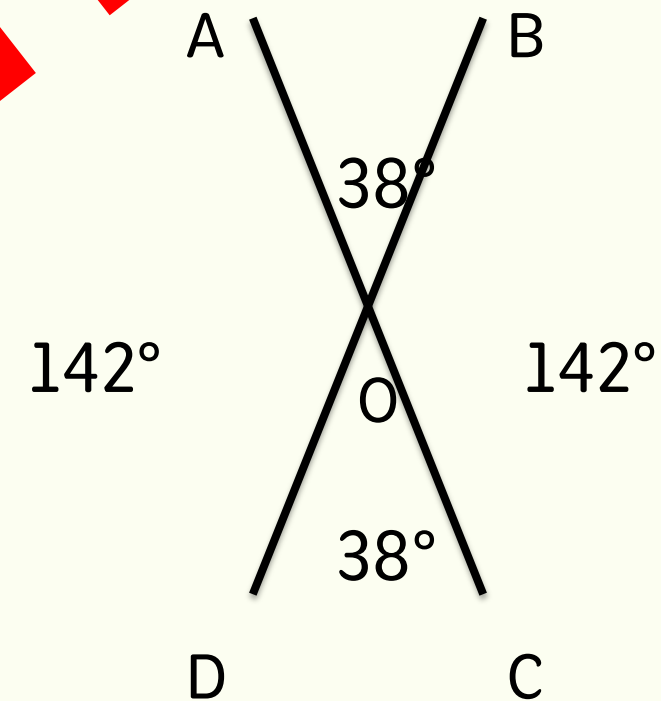
Two complete lines

Lines AC and BD cross at O.

Opposite sectors are equal.

Each adjacent pair makes a straight angle.

Identify the relationship before calculating.



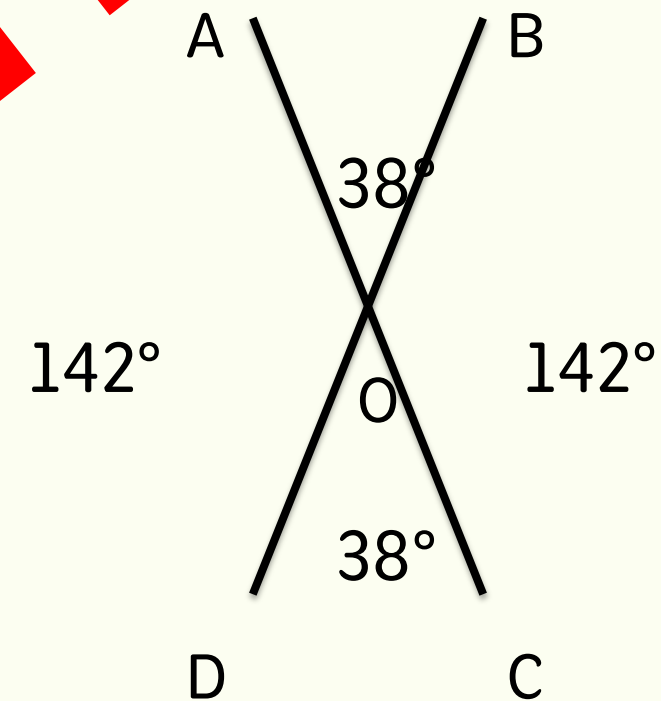
The 38° crossing

$\angle AOB = 38^\circ$. Its opposite $\angle COD = 38^\circ$.

$\angle BOC$ and $\angle DOA$ are each 142° .

Reason: $180^\circ - 38^\circ = 142^\circ$.

Check: $38^\circ + 142^\circ = 180^\circ$.



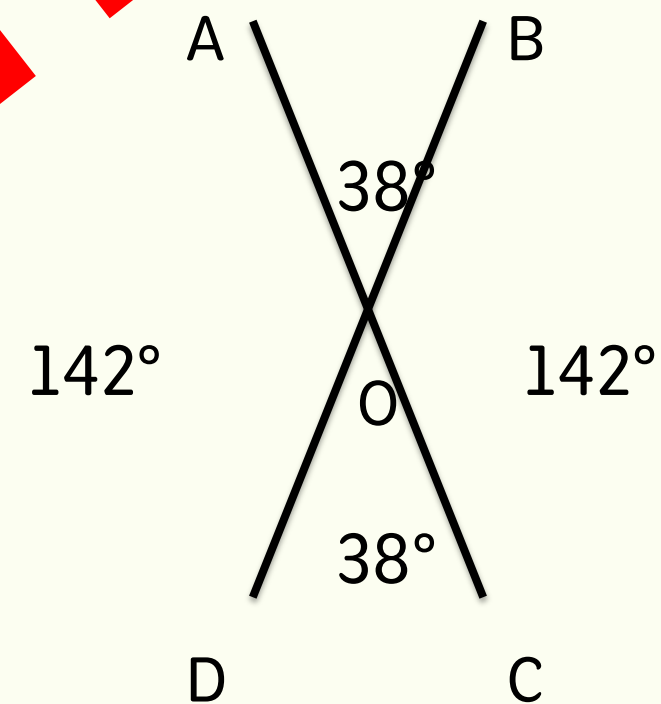
Adjacent is different

$\angle AOB$ and $\angle BOC$ share ray OB .

They are adjacent, not opposite.

Their sizes are 38° and 142°

Together they form the straight line AC .



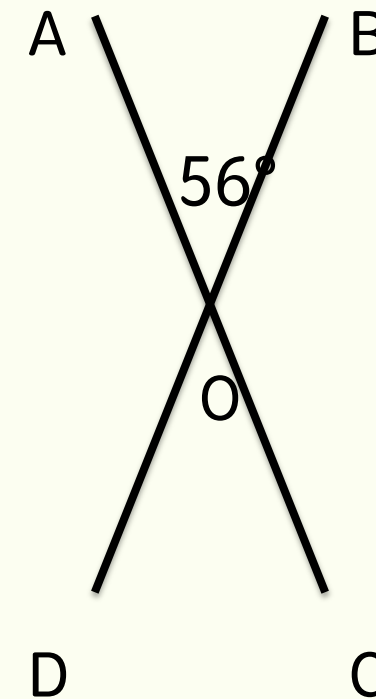
Guided decision

One angle in this crossing is 56° .

Which sector is opposite it?

Which sector is adjacent to it?

Pause and give a reason before calculating.

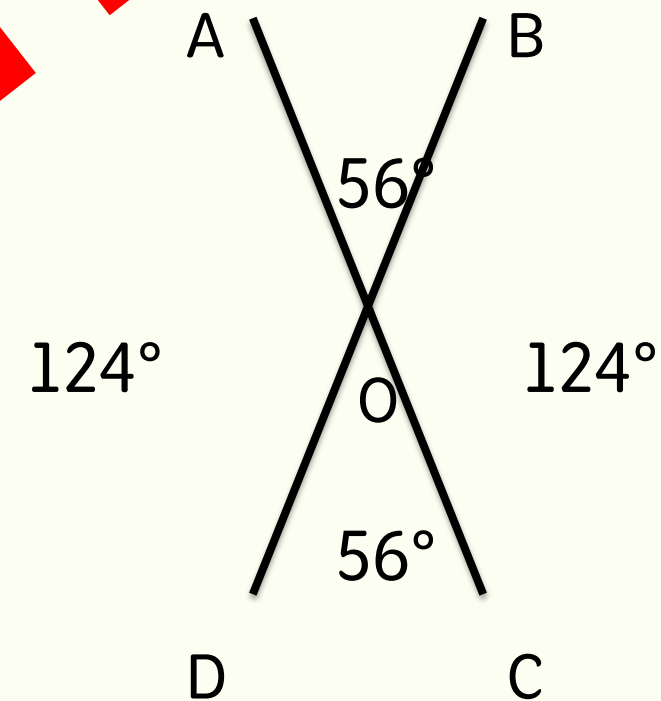


Guided answer

Opposite = 56° : vertically opposite angles are equal.

Adjacent = 124° : $180^\circ - 56^\circ = 124^\circ$.

Check both adjacent pairs sum to 180° .



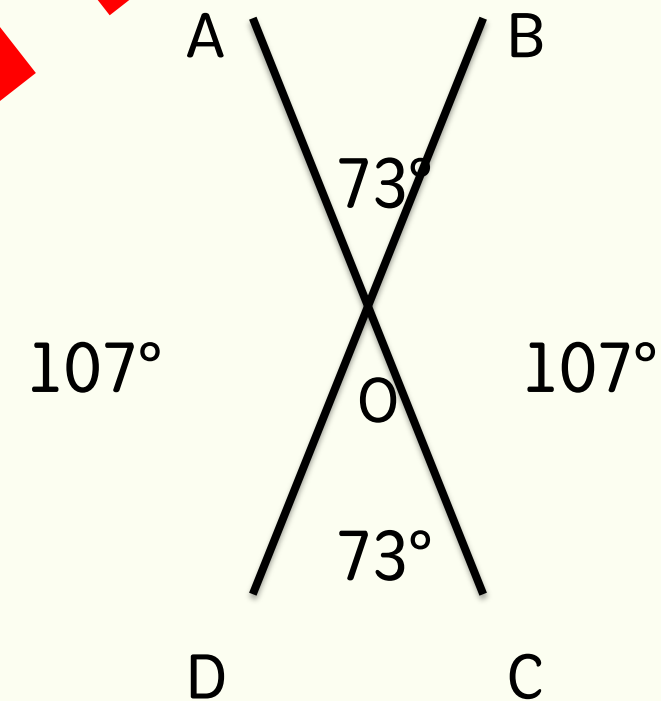
Rotation preserves angles

One angle is 73° in a rotated crossing.

Its opposite is 73° .

Each adjacent angle is 107° .

Turning the page changes no relationship.



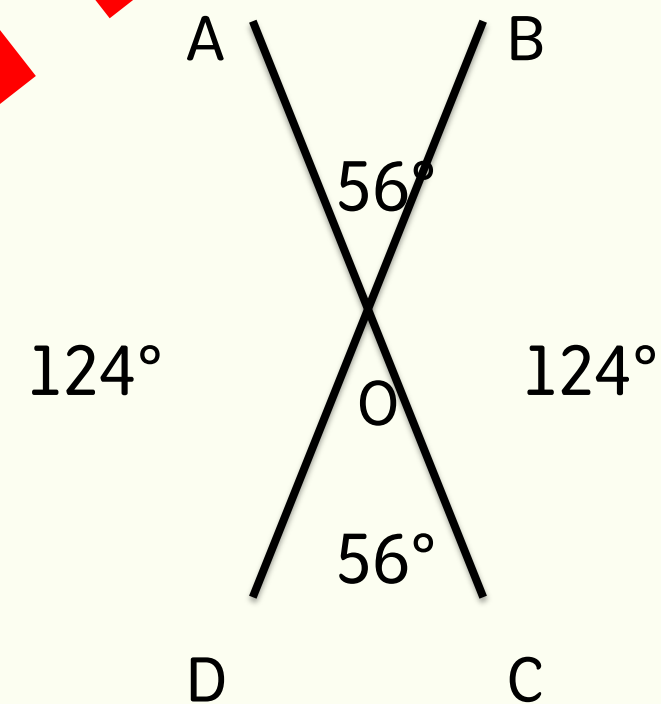
A complete game turn

Card: one angle is 56° .

Opposite pair: EQUAL at 56° each.

Adjacent pair: SUPPLEMENTARY at 56° and 124° .

The reason earns the second point.



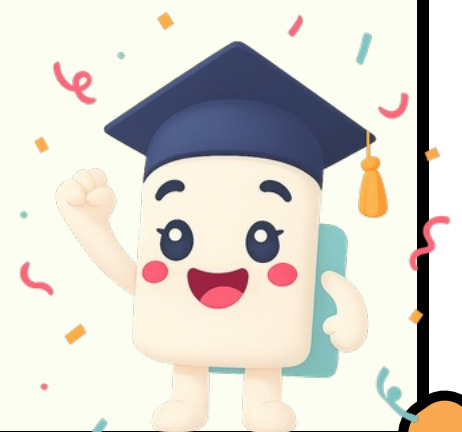
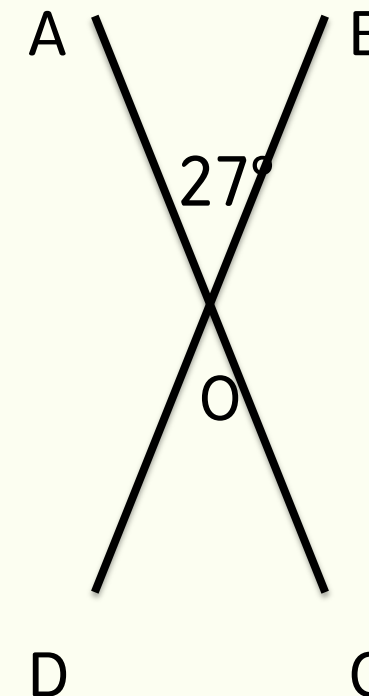
Your challenge

One angle is 27° in a crossing.

Find the other three angles.

Name a reason for each step.

Check a straight-line pair.



A common mistake

“They look across the point, so they are equal” is not enough.

Check for one shared vertex and two complete straight lines.

Three rays alone cannot establish a vertically opposite pair.



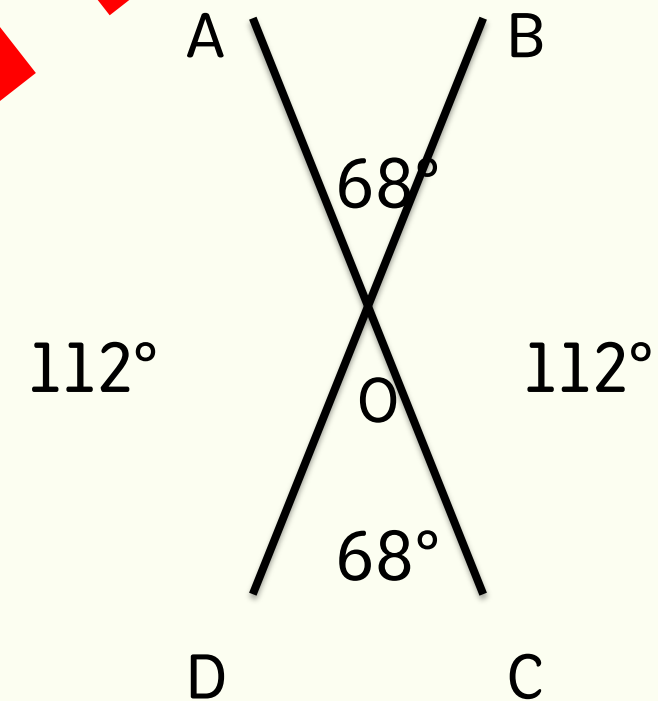
Fresh transfer

One angle is 68° .

Its opposite is 68° .

Both adjacent angles are 112° .

Explain and check: $68^\circ + 112^\circ = 180^\circ$.



Three practice rounds

Support: fold a paper half-turn and label models.

Core: find all four with two named reasons.

Extend: repair an invalid inference with new rules.

Keep the same angle relationship target.



Independent assessment

Two differently oriented crossings.

Label all four angles in each.

Name opposite and adjacent pairs.

Give a reason for every deduction and check.



Reflect on evidence

Did I identify two complete lines?

Did I distinguish opposite from adjacent?

Did I justify each unknown without measuring?

What is my next specific step?



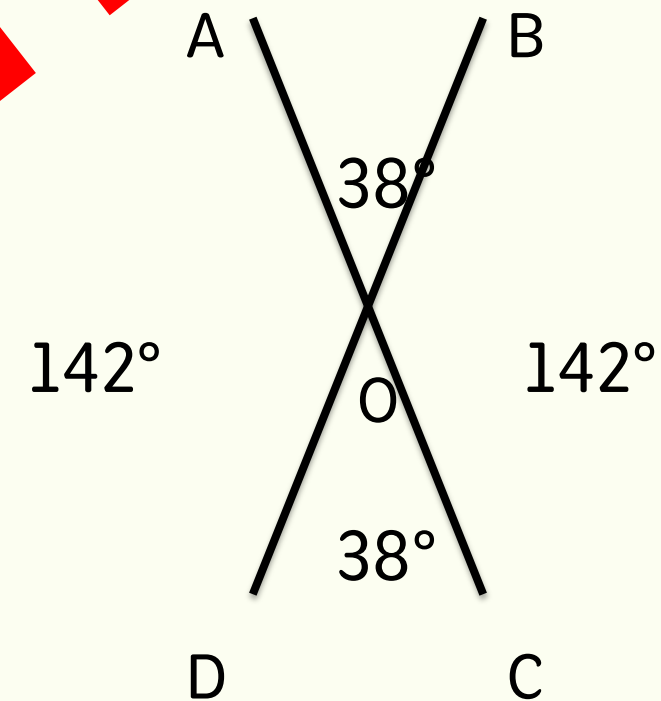
What stays true

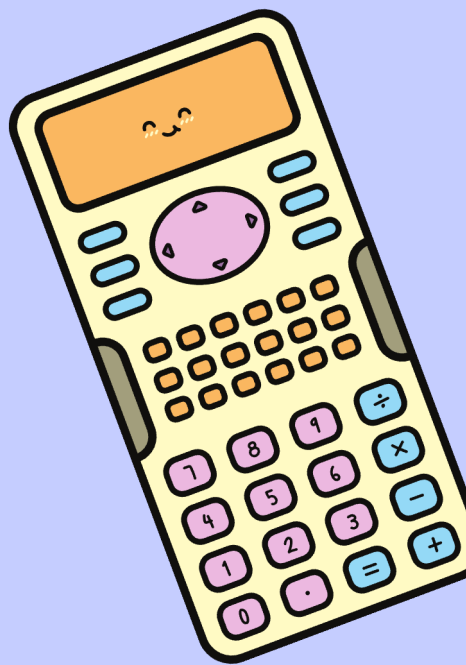
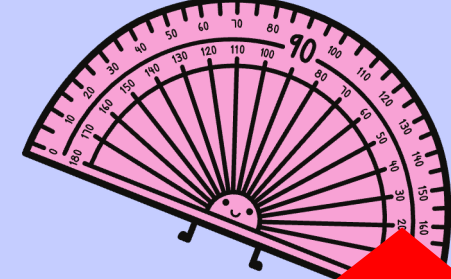
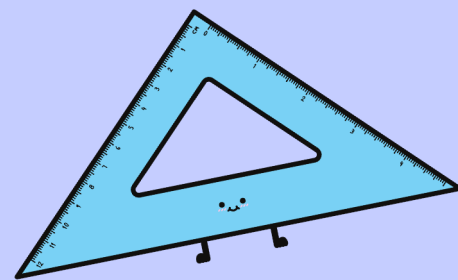
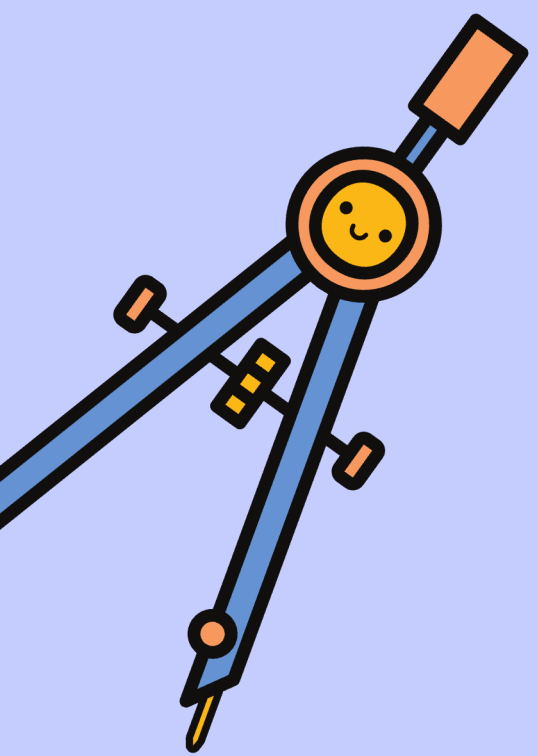
Opposite angles are equal at a crossing

Adjacent angles along a straight line sum to 180

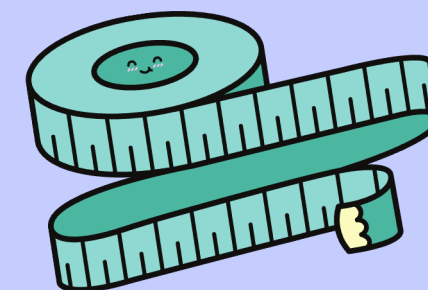
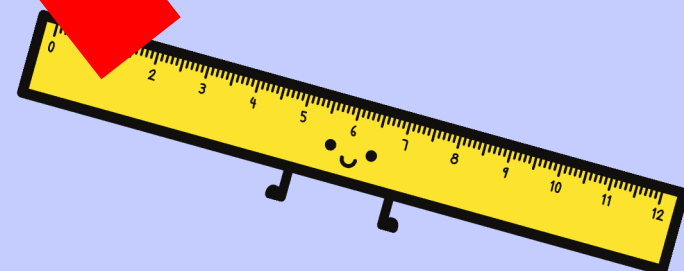
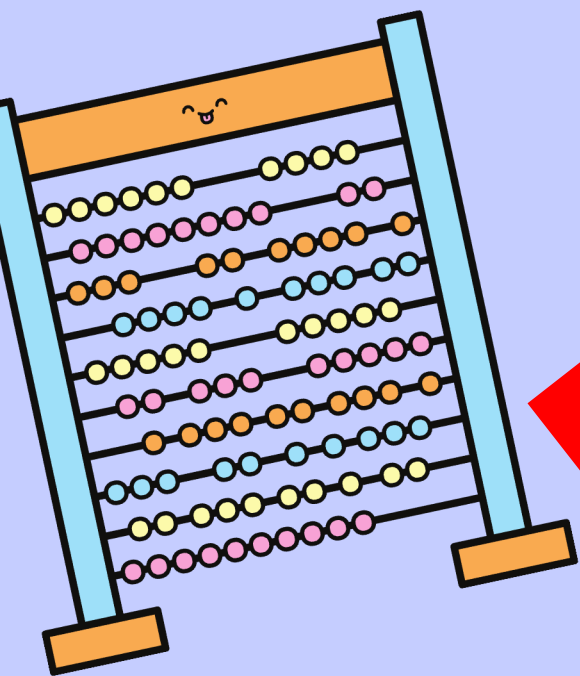
Rotation and new labels don't change either fact.

Reason first; calculate; check.





Well Done
Reason, calculate, check.

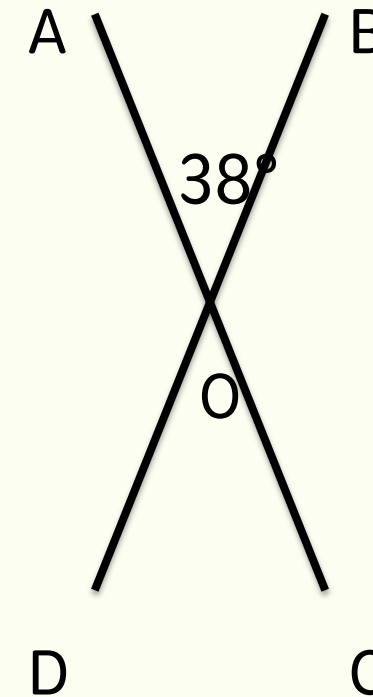


Crossing Lines, Equal Opposites – Quiz



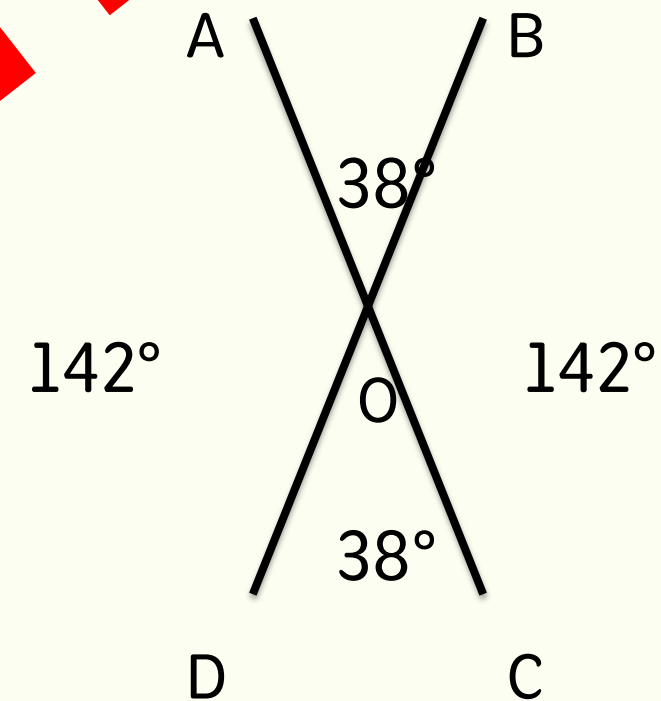
Question 1: Opposite angles

Two complete straight lines cross. One angle is 38° .
What is its opposite angle?



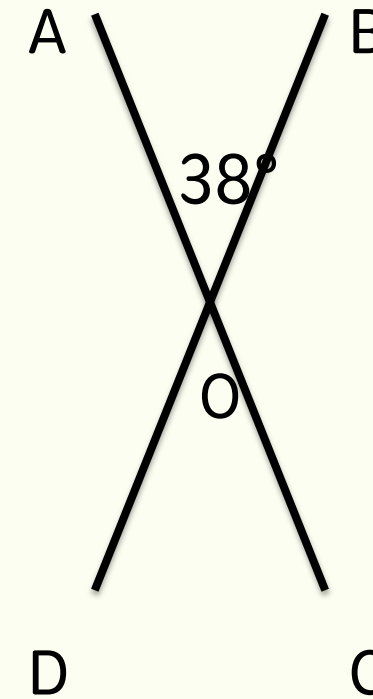
Answer 1: Opposite angles

38° . Vertically opposite angles are equal



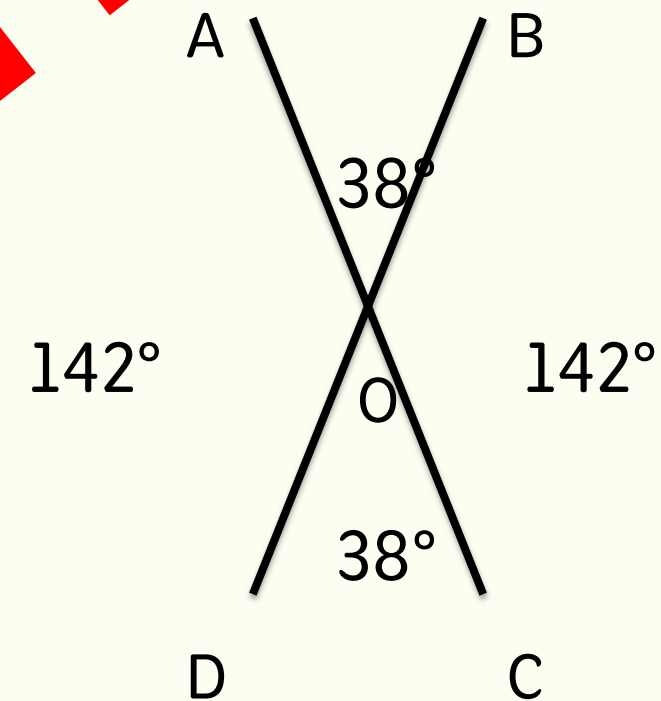
Question 2: Adjacent Angles

One angle is 38° . What is an adjacent angle on a straight line?



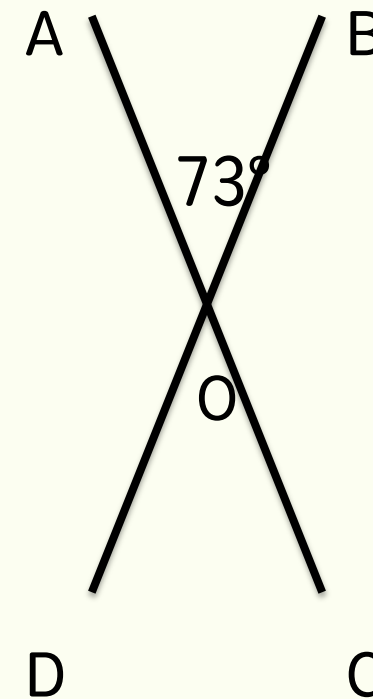
Answer 2: Adjacent partition

142° . The adjacent pair sums to 180° : $180^\circ - 38^\circ = 142^\circ$



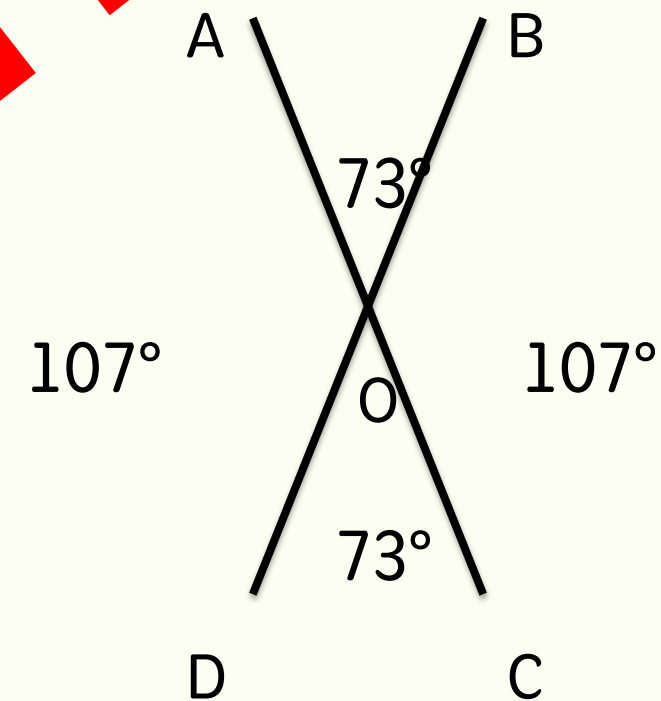
Question 3: Rotation

Does turning the crossing picture change opposite-angle equality? Explain.



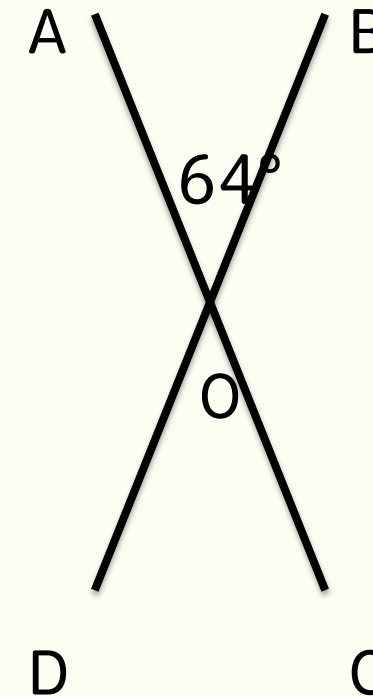
Answer 3: Rotation

No. Rotation preserves the same rays, vertex and opposite relationship.



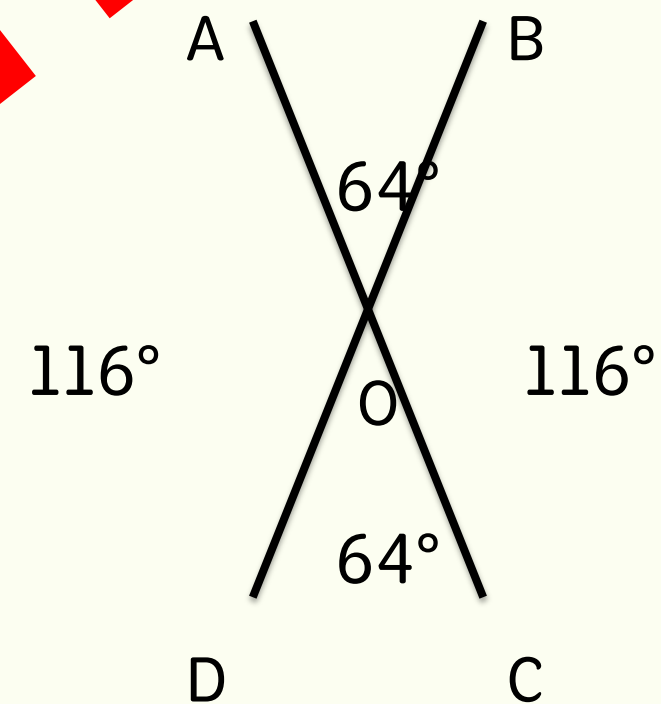
Question 4: Core item

One angle is 64° . Find its opposite and one adjacent angle.



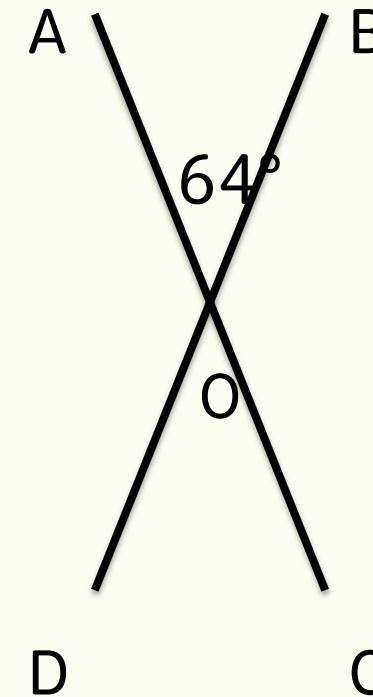
Answer 4: Core item

Opposite 64° . Adjacent 116° because $180^\circ - 64^\circ = 116^\circ$



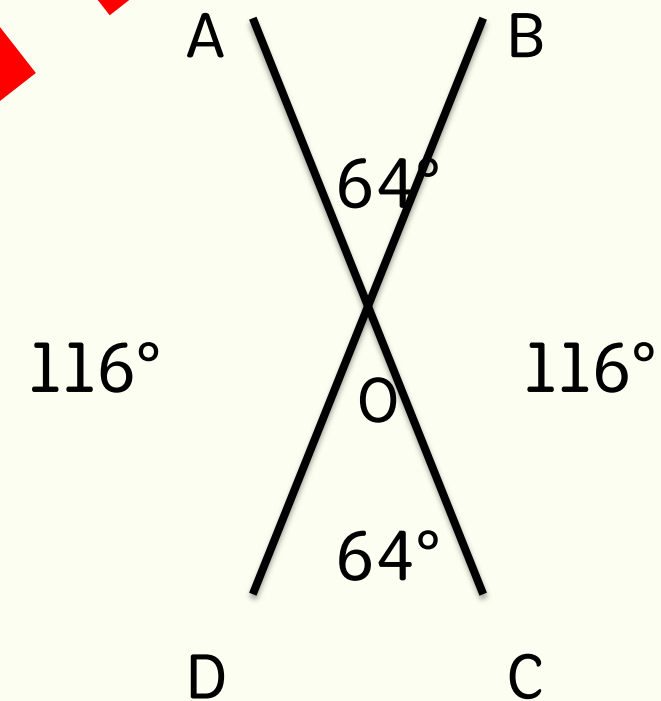
Question 5: One changed condition

At a 64° crossing, compare the angle opposite it with
an angle next to it.



Answer 5: One changed condition

Opposite = 64° (equal). Adjacent = 116° (supplementary). Sharing a ray changes which relation applies.



Question 6: Correct the claim

A learner says any two angles that look across are equal. What must be checked?



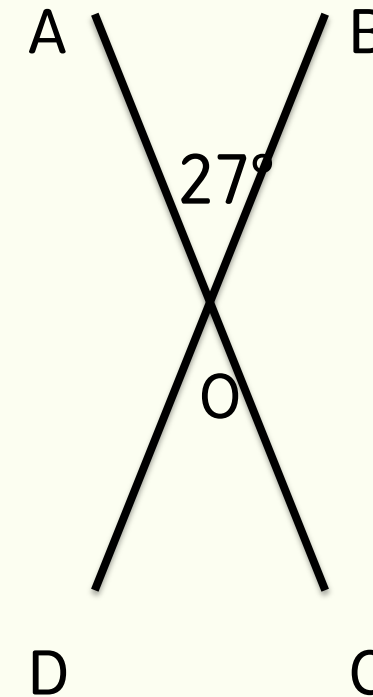
Answer 6: Correct the claim

There must be two complete straight lines meeting at the same O.
Three rays are a counterexample.



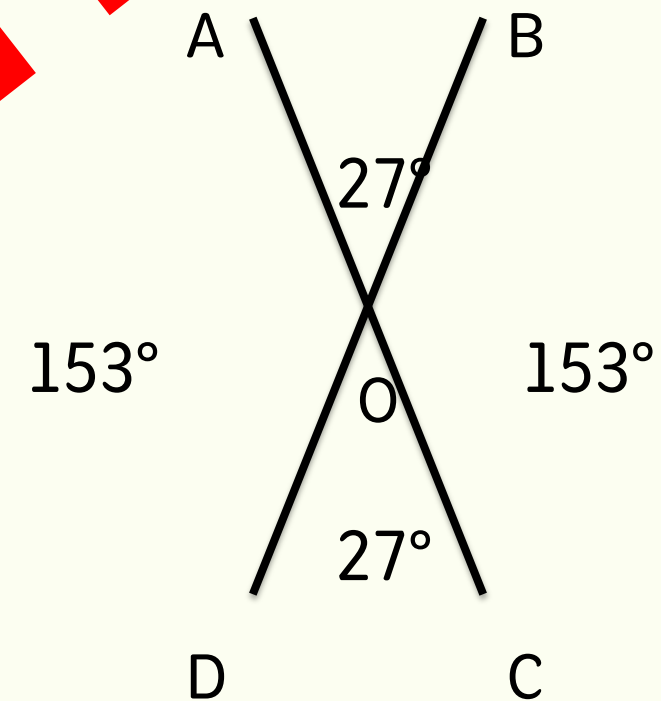
Question 7: Game challenge

In a complete crossing one angle is 27° . Find the other three angles with reasons.



Answer 7: Game challenge

$27^\circ, 153^\circ, 27^\circ, 153^\circ$ in cyclic order. Opposite pairs equal
adjacent pairs sum to 180° .



Question 8: Compare two cases

Compare a 56° crossing and a rotated 73° crossing. What is the same? What changes?



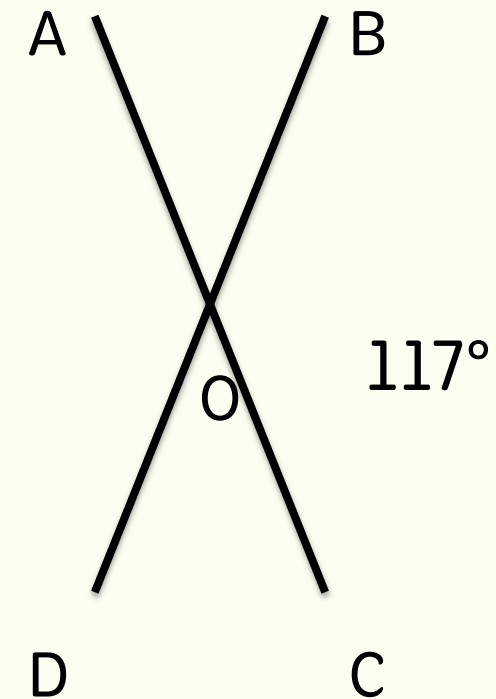
Answer 8: Compare two cases

Both have equal opposite pairs and adjacent sums of 180° . The number pairs are $56^\circ/124^\circ$ and $73^\circ/107^\circ$.



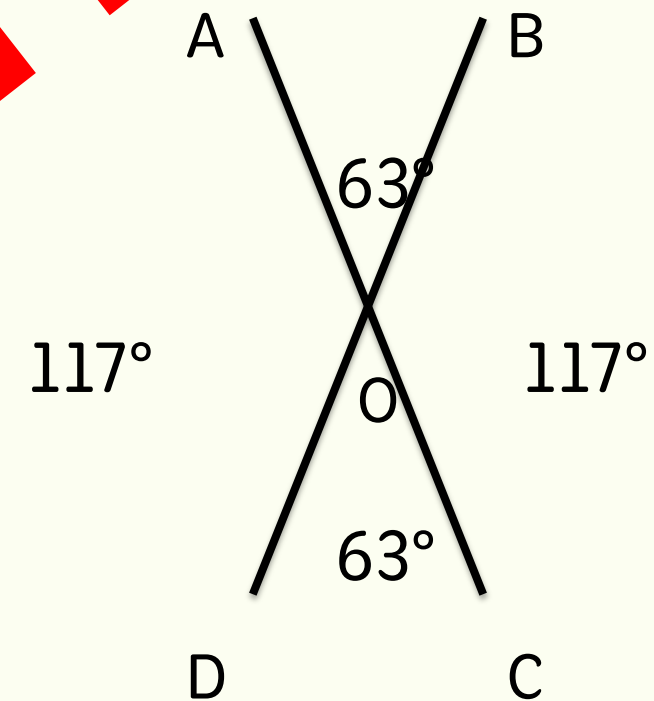
Question 9: Near transfer

A relabelled crossing has one angle 117° . What is an adjacent angle?



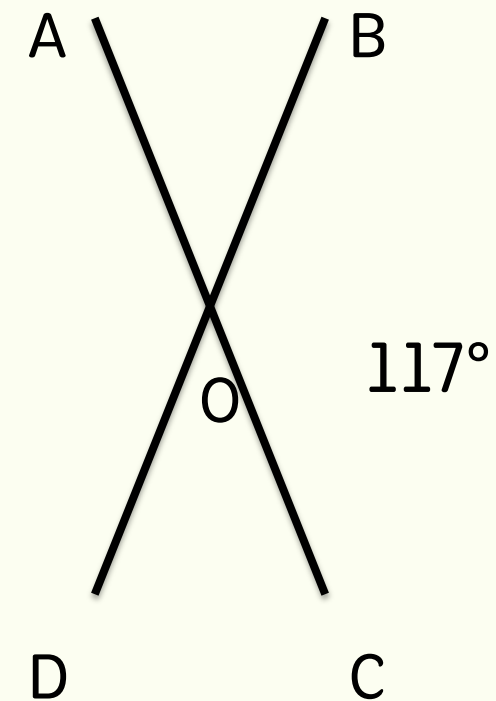
Answer 9: Near transfer

63°. The relabelling does not change $180^\circ - 117^\circ = 63^\circ$



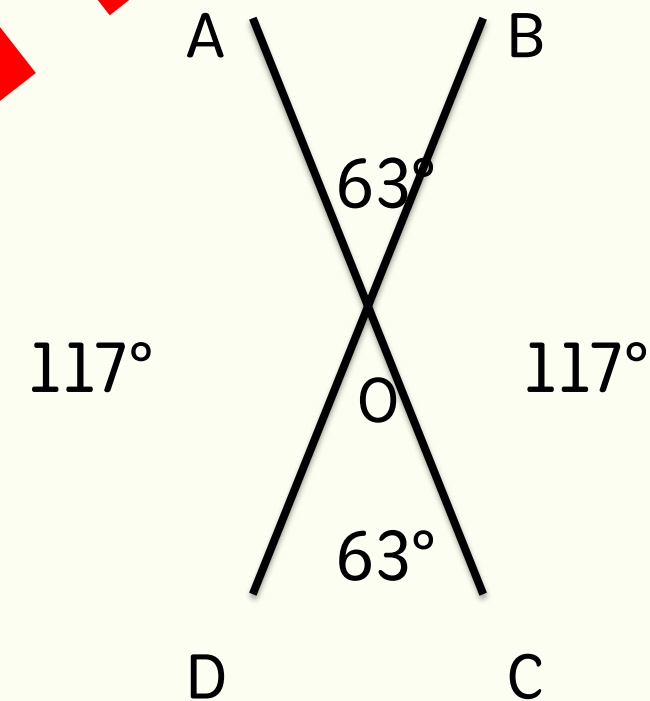
Question 10: Give evidence

Why is the adjacent angle in Question 9 equal to 63° ?



Answer 10: Give evidence

The two adjacent sectors share a ray and make a straight line: $117^\circ + 63^\circ = 180^\circ$.



Question 11: Reject an inference

Is an angle at a different vertex vertically opposite to the 117° angle?



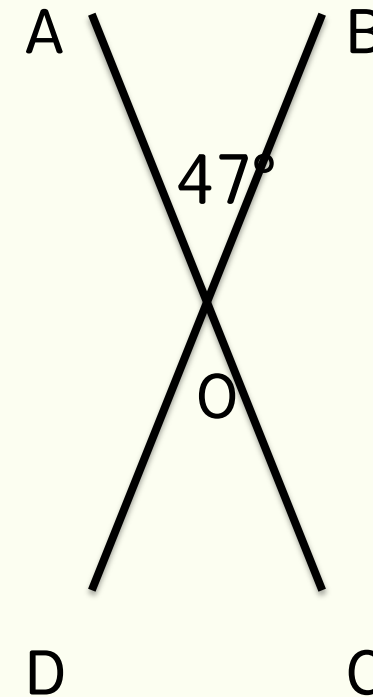
Answer II: Reject an inference

No. Vertically opposite angles must have the same vertex and be made by two intersecting straight lines.



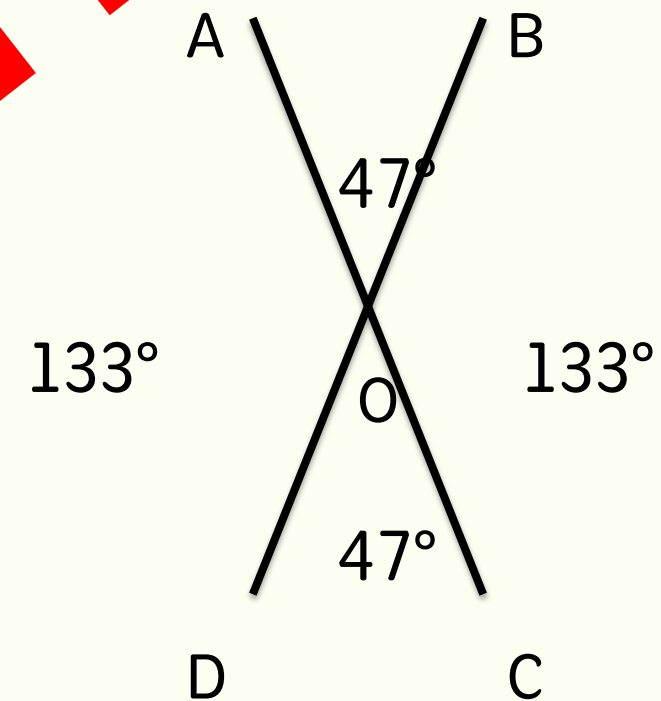
Question 12: Final application

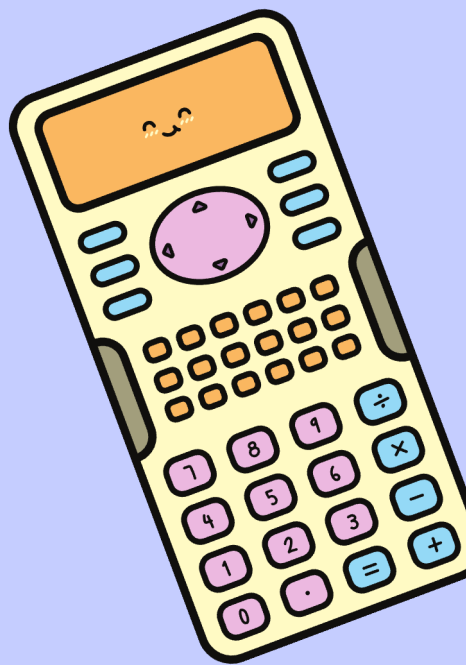
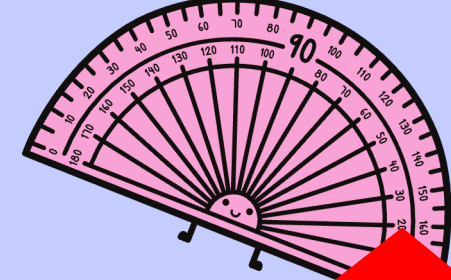
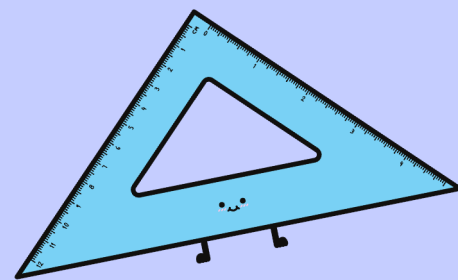
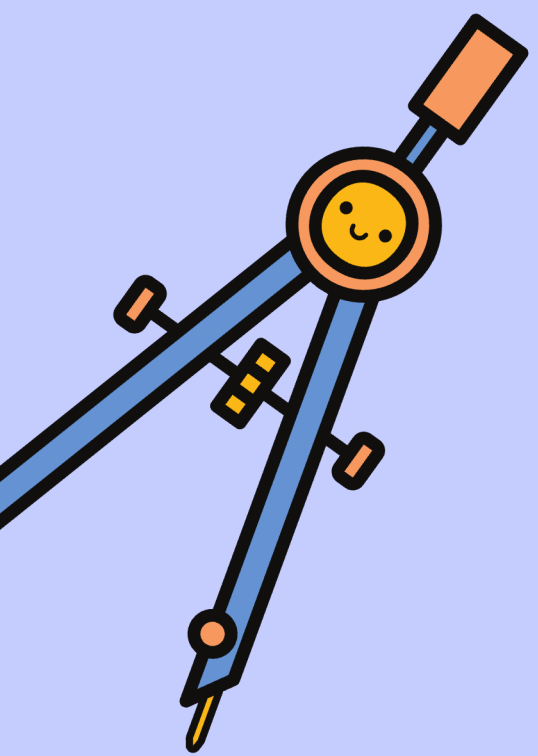
A rotated crossing has one angle 47° . Find all four angles and justify each unknown.



Answer 12: Final application

$47^\circ, 133^\circ, 47^\circ, 133^\circ$ in cyclic order. Opposite = 47° .
adjacent = $180^\circ - 47^\circ = 133^\circ$. Check $47^\circ + 133^\circ = 180^\circ$.





Well Done!
Opposite adjacent,
justifying.

