

Script Code	v22cb09ma0809
Screenplay Status	Signed Off ▾
Title	Each angle of a rectangle is a right angle.
Grade	9
Writer	Virender Kumar
TL	Shalini Kumpati
SME	Bela Arora
Editor	Chandana Santhosh
Creative Director	Ninad Dilip Mohite
Final Sign-off	Vishnu Dev
Mini Takeaway	Show that each angle of a rectangle is a right angle
Key Takeaway	Show that each angle of a rectangle is a right angle
Research Doc.	Link
Word Count	686
Presenter	Aashay Chandrakant Mane
Characters	Presenter
Locations	STUDIO
Presenter Outfit	Smart Casual
Props	Not required
Sub strand	Geometry III

INT. STUDIO - AFTERNOON

Presenter enters the frame and breaking the fourth wall he turns to the viewers and starts interacting.

PRESENTER

Oh, Hey everyone!

INSERT MoG:

Split screen:

Left side: Show the younger boy sitting on his study table in his room and looking at multiple posters resting on a table beside the presenter.

Right side: Presenter.

PRESENTER

That's my younger brother.

(beat)

He loves posters of his favourite cartoon characters.

The young boy lifts up the poster, The poster looks a bit like a rectangle except one line is a bit slanted.

PRESENTER

So, one fine day he decides to make a rectangular shaped poster.

However, the problem was that even after multiple attempts he couldn't make a perfect rectangle.

INSERT ENDS

PRESENTER

So in order to help him I gave a few suggestions based on the properties of rectangles.

Show a rectangle then highlight all its angles and label them as 90°

PRESENTER

One of which was, each angle of the rectangular poster should be equal to 90 degrees.

(beat)

And that would make the perfect rectangular poster.

INSERT ENDS

PRESENTER

Now you must be wondering how we can say that each angle in a rectangle is a right angle.

(beat)

Let me show it to you with the help of an activity.

FSA (SECTION CARD): "Activity"

FSA ENDS. ([ref](#))

INSERT MoG:

NOTE: Retain every step for a few moments for viewers to understand.

On cue with "First we will..." do the split screen and a piece of paper appears beside the presenter laying on the table and then draw a rectangle on it. ([ref](#))

PRESENTER

First we will take two rectangular sheets of paper,

(beat)

...say ABCD and PQRS.

On cue with "Then, using a protractor..." a protractor slides in and measures all the angles with a brief moment of break for viewers to understand it better. (ref)

PRESENTER

Then, using a protractor, measure all four angles of each rectangular sheet.

On cue with "Now, what do you..." highlight the angles in the rectangle. (ref)

PRESENTER

Now, what do you observe about their angles?

On cue with "We observe that each..." Highlight all the angles with a pop-up effect. (ref)

PRESENTER

We observe that each of the four angles of both the rectangular sheets measures ninety degrees.

On cue with "We can repeat..." a few blank sheets with rectangular shapes appear beside the presenter.

PRESENTER

We can repeat this activity as many times as we want and still get the same result.

(beat)

So, each angle in a rectangle is a right angle.

TOS:

Each angle in a rectangle is a right angle.

PRESENTER

Wondering if this statement is always true?

(beat)

Let's try to prove this result mathematically.

INSERT ENDS.

FSA (SECTION CARD): "Each angle of a rectangle is a right angle" ([ref](#))
FSA ENDS.

INSERT MoG:

On cue with "We are given a..." add the following figure and on cue with "We are required to" highlight angle, A, B, C and D and add the following text. ([ref](#))

Given: ABCD is a rectangle

$\angle A = 90^\circ$

To prove: $\angle A = \angle B = \angle C = \angle D = 90^\circ$

PRESENTER

We are given a rectangle ABCD,
(beat)

We are required to prove that each angle of a rectangle measures ninety degrees, that is, angle A is equal to angle B is equal to angle C is equal to angle D is equal to ninety degrees.

PRESENTER

Let's begin with the proof. ([Link](#))
(beat)

We know that,
(beat)

A rectangle is a parallelogram in which one angle is a right angle. ([Link](#))
(beat)

...Say angle A is equal to ninety degrees.

TOS:

A rectangle is a parallelogram in which one angle is a right angle.

On cue with, "...both pairs of opposite sides..." highlight AB-DC and AD-BC.

PRESENTER

We also know that in a parallelogram,
both pairs of opposite sides are
parallel to each other.

On cue with, "So, we have..." show two arrows on AD-BC and display text.

PRESENTER

So, we have AD parallel to BC,

On cue with "also, we have..." highlight both AD and BC and then AB.

AD || BC

And AB is a transversal.

PRESENTER

...also, we have line AB as a
transversal, as it intersects lines AD
and BC at two distinct points A and B
respectively.

On cue with "We know that..." add the following TOS as a footnote. ([ref](#))

PRESENTER

We know that if two parallel lines are
cut by a transversal, then each pair of
interior angles on the same side of the
transversal are supplementary. [[G7 Ch06](#)]

TOS:

If two parallel lines are cut by a transversal, then each pair of interior angles on the same side of the transversal are supplementary.

On cue with "Can you spot..." highlight the side AB, and on cue with "Yes, here angle..." highlight angle A and angle B in the figure and on cue with "This implies..." while adding the following text. ([ref](#))

$$\angle A + \angle B = 180^\circ \quad [\text{Sum of interior angles on same side of transversal}]$$

PRESENTER

Can you spot the interior angles on the same side of transversal AB?

(beat)

Yes, here angle A and angle B are interior angles lying on the same side of transversal AB.

(beat)

This implies that angle A plus angle B is equal to one hundred eighty degrees.

On cue with "But, we are given..." highlight angle A in the figure as a right angle, and on cue with "So, substituting..." add the following text. ([ref](#))

$$90^\circ + \angle B = 180^\circ \quad (\because \angle A = 90^\circ)$$

PRESENTER

But, we are given that angle A is of the measure ninety degrees,

(beat)

So, substituting angle A for ninety degrees will give us ninety degrees plus angle B equal to one hundred eighty degrees.

On cue with "Solving further..." highlight the number "90°" and it slides to the right hand side of the "=" as shown below. ([ref](#))

$$\angle B = 180^\circ - 90^\circ$$

PRESENTER

Solving further, we get

(beat)
...angle B equal to one hundred eighty
degrees minus ninety degrees,

On cue with "Which will give us..." add the following text. (ref)

$$\angle B = 90^\circ$$

PRESENTER
...which is ninety degrees.

On cue with "So now we have..." add the following text beside the
presenter. (ref)

$$\angle A = \angle B = 90^\circ$$

PRESENTER
So now we have angle A and angle B both
equal to ninety degrees.

INSERT ENDS.

PRESENTER
Phew! That's half of our work done.
We already have angle A and angle B
each measuring ninety degrees.
(beat)
Now we need to prove that each of the
remaining two angles, that is, angle C
and angle D, also measures ninety
degrees.
(beat)
So let's get back to work.

INSERT MoG:

On cue with "We know that..." add the following TOS and then on
cue with "This implies..." highlight angle A and angle C, and then
highlight angle B and angle D and then add the following
text. (ref)

$$\begin{aligned}\angle A &= \angle C \\ \angle B &= \angle D\end{aligned}$$

PRESENTER

We know that opposite angles in a parallelogram are equal to each other.

(beat)

This implies that angle A is equal to angle C,

(beat)

...and angle B is equal to angle D.

TOS: Opposite angles in a parallelogram are equal to each other.

On cue with "Therefore,..." angle A and angle B gets replaced by "90°". (ref)

$\angle C = 90^\circ$

$\angle D = 90^\circ$

PRESENTER

As each of the angles A and B measures ninety degrees.

(beat)

Therefore, angle C is equal to ninety degrees, and angle D also measures ninety degrees.

On cue with "Thus we can..." add the following TOS beside the presenter. (ref)

PRESENTER

Thus, we can say that each angle in a rectangle is a right angle.

TOS:

Each angle in a rectangle is a right angle.

INSERT ENDS.

PRESENTER

And that's all for this session.

(beat)

Here's a question for you before you
leave...

On cue with "Have a look at..." add the rectangle beside the
presenter ([ref](#))

PRESENTER

Have a look at this rectangle...

On cue with "It has two diagonals..." highlight the diagonals
beside the presenter. ([ref](#))

PRESENTER

It has two diagonals, AC and BD.

(beat)

Observe these diagonals.

Can you tell me if they have equal
length or not?

(beat)

What I mean is, can we say the
diagonals of a rectangle are of equal
length?

(beat)

Well, watch our next video to find out.