



## HORIZONTAL PUPILS

by Lanny and Marilyn Johnson

The Jones family was visiting a petting zoo at the annual County Fair. Billy was very excited. It was his first time touching and holding farm animals. He hugged a young goat and exclaimed, "Mom and Dad! This goat's eyes are really weird!"

Mrs. Jones laughed and said, "I used to think the same thing, Billy, until my sister and I began raising goats for a 4-H project. Those dark stretched-out rectangles in the goat's eyes are its pupils."

"What's a pupil?"

"A pupil is the hole in the eye that lets light in. During the brightest part of the day, the pupil contracts or becomes smaller, letting in less light. At night, when there's low light, the size of the pupil dilates or gets bigger, letting in more light.

"Pupils come in lots of different shapes. Look around at the other animals in the corral and notice that the sheep, pony, and calf also have horizontal pupils. Do you see they have something else in common?"



"Yeah! Their eyes are on the sides of their heads!" Mary exclaimed.

"That's right. Their eyes on the side of their heads give them a wide view of their surroundings. They can see nearly all around them without moving their heads. A goat can see between 320 and 340 degrees. Animals with this wide-angle view are very sensitive to the slightest movements around them. In spite of this, however, their ability to see how far away something is (depth perception) is poor.<sup>1</sup>

"Our eyes are on the front of our head and have round pupils. Without moving our heads, we cannot see our ears because we can only see from up to 200 to 220 degrees side to side. However, looking straight ahead, we have better depth perception than animals with eyes on the side of their head."<sup>2</sup>

"What other animals have rectangular horizontal pupils?" Mary asked.

"Deer and antelope also have them. All these animals are herbivores, which means they eat plants. They're also known as prey animals because they're targets of meat-eating carnivores (predators). These grazing animals are able to rotate (turn) their eyes, some more than 50 degrees - 10 times

more than we can. So with their heads down eating, they can roll their eyes up, watching for predators without lifting their heads."<sup>3,4</sup>

"With their wide-angle vision, motion-detection capabilities, and ability to keep their pupils parallel to the ground, these types of animals can quickly spot predators from almost all directions. Once they catch sight of the danger, they can run away."

"You said some animals have differently

shaped pupils. What are some of those?" Mary asked.

"Domestic cats and foxes are examples. They are ambush predators that hide and pounce on their prey from a close distance. Their eyes are on the front of their heads and have thin,



vertical slits for pupils. These slits help them judge distance better without moving their head, making it easier to pounce on prey. Wolves and lions, their bigger relatives, have rounded pupils and chase down their prey instead of ambushing them.<sup>5</sup>

"In the beginning,

all the creatures and man were created to eat plants. And before Adam sinned, there was no death in this world (Romans 5:12). Therefore, no one was killing or eating anyone. God cursed the world because of man's sin (the fall). He foresaw this fall and equipped creatures with built-in knowledge designs for attack and defense in a cursed world. He turned this knowledge on at the fall. Isn't it fascinating, kids, of all the designs God created in His creatures for their well-being?" Mrs. Jones asked. "It reminds me of Psalm 104:24, 'O LORD, how manifold are your works! In wisdom have you made them all; the earth is full of your creatures.'"

### References

<sup>1</sup> <https://a-z-animals.com/blog/sheep-eyes-vs-goat-eyes-is-there-a-difference/>

<sup>2</sup> [https://en.wikipedia.org/wiki/Peripheral\\_vision#/media/File:Peripheral\\_vision.svg](https://en.wikipedia.org/wiki/Peripheral_vision#/media/File:Peripheral_vision.svg)

<sup>3</sup> <https://www.zmescience.com/feature-post/natural-sciences/animals/mammals/goat-rectangular-pupils/>

<sup>4</sup> Ibid

<sup>5</sup> <https://theconversation.com/revealed-why-animals-pupils-come-in-different-shapes-and-sizes-45796>

\*\* Goat & Cat photo: <https://www.freepik.com>



Find the 18 differences between the 2 farm scenes.

Puzzles by Lanny Johnson © AOI 2025



**WORD SEARCH**  
 Look for animals in the puzzle below from the **WORD LIST** below. The hidden word might be up, down, sideways, slanted, or backwards.

W	O	L	F	W	S	X	O	V	X	U
X	B	H	O	P	P	M	O	M	G	A
U	M	C	E	S	A	F	R	K	H	H
D	O	E	M	D	G	P	S	G	O	A
X	H	M	G	E	F	T	X	B	R	V
S	T	Z	O	E	N	O	O	A	S	J
U	W	W	A	R	T	Q	X	K	E	K
F	J	G	T	C	I	K	Q	K	U	L
B	B	D	V	S	A	R	I	K	W	I
X	C	C	Y	V	U	T	V	V	T	O
A	N	T	E	L	O	P	E	N	K	N

**WORD LIST**  
 ANTELOPE - CAT - COW - DEER - FOX  
 GOAT - HORSE - LION - SHEEP - WOLF

FOR ANSWERS, GO TO:  
[www.discovercreation.org/kids/newsletteranswers.htm](http://www.discovercreation.org/kids/newsletteranswers.htm)

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