

The background features a series of concentric circles in light gray, some solid and some dashed, creating a ripple effect. A large blue speech bubble is centered on the page, containing the title and subtitle. A small blue rectangle is located in the bottom-left corner.

# BEGINNER BASICS

APERTURE AND SHUTTER SPEED

# SNAPSHOTS OR THOUGHTSHOTS?



# WHAT IS MOST IMPORTANT TO YOU?

- GETTING THE PICTURE (SNAPSHOT)
- **THOUGHT SHOTS**
  - DEPTH OF FIELD
  - BLUR OR ITS LACK
  - NOISE

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# THE EXPOSURE TRIANGLE

# EXPOSURE IS DETERMINED BY

HOW LONG SHUTTER IS OPEN

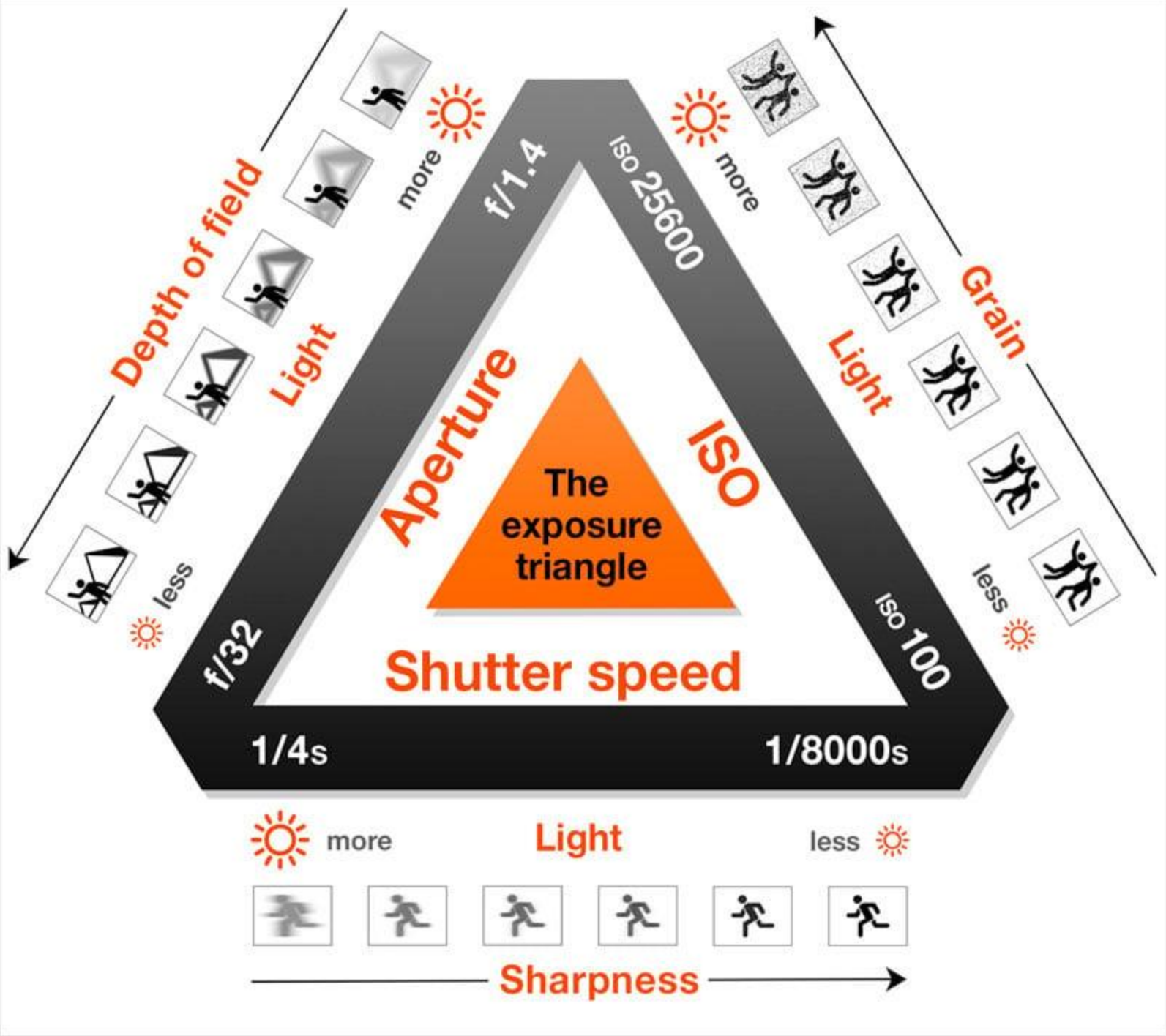
THE SIZE OF THE LENS OPENING (APERTURE)

THE SENSITIVITY OF THE SENSOR (ISO)



# YOUR EXPOSURE

(THINK OF A PHOTON AS A WATER MOLECULE AND YOUR EXPOSURE IS A BUCKET FULL OF WATER)



## REVIEW OF LAST CLASS

- AN APERTURE IS AN JUST AN OPENING LIKE THE PUPIL OF YOUR EYE.
- THE LARGER IT IS, THE MORE LIGHT GETS TO THE CAMERA'S SENSOR.
- THE FOCAL LENGTH OF A LENS IS THE DISTANCE FROM THE CENTER OF THE LENS TO SENSOR.
- AN F/NUMBER IS THE FRACTION OF THE FOCAL LENGTH THAT THE LENS APERTURE IS.
- $F \text{ STOP} = \text{LENS FOCAL LENGTH} / \text{LENS DIAMETER}$
- FOR **ALL** FRACTIONS, THE LARGER THE DENOMINATOR, THE SMALLER THE ABSOLUTE VALUE. FOR EXAMPLE,  $1/8$  IS HALF AS MUCH AS  $1/4$  AND  $1/2$  IS TWICE AS LARGE AS  $1/4$ . SO IT IS WITH F STOPS, YOU DOUBLE OR HALF THE AMOUNT OF LIGHT REACHING THE SENSOR BY MOVING BETWEEN FULL STOPS.



## REVIEW OF LAST CLASS

- DEPTH OF FIELD IS THE AMOUNT OF A SCENE THAT IS *ACCEPTABLY SHARP* IN FRONT OF AND BEHIND THE SUBJECT (ROUGHLY 1/3 IN FRONT AND 2/3 BEHIND).
- DEPTH OF FIELD IS A FUNCTION OF THE FOCAL LENGTH OF THE LENS AND THE APERTURE AND DISTANCE TO THE SUBJECT.
- A LARGE APERTURE PRODUCES A SHALLOW DEPTH OF FIELD WHEREAS A SMALL APERTURE GIVES GREATER DEPTH OF FIELD

## YOUTUBE VIDEOS

- [Aperture and Shutter - WHAT IS their relationship? A photography tutorial for beginners. – YouTube](#)
- <https://youtu.be/NcKrT6h7oHo>
- <https://youtu.be/LmdBh0YHCfQ>
- [What is panning and how to do it \(diyphotography.net\)](#)
- [How Aperture & Shutter Speed Interact for the Best Photos Possible \(VIDEO\) | Shutterbug](#)

A blue speech bubble with a tail pointing downwards, containing the word 'EXAMPLES' in red, bold, sans-serif capital letters. The background of the slide features faint, concentric circles and dashed lines in light gray.

**EXAMPLES**

# APERTURE AND DEPTH OF FIELD

BOKEH IS THE TERM USED TO DISCRIBE THE  
BLURRED BACKGROUND DUE TO A SHALLOW  
DEPTH OF FIELD



OM-1  
300 mm f/4  
1/2500 sec  
ISO 320







OM-1  
300 mm f/4  
1/1600  
ISO 400

**A STRONG  
BOKEH  
INCREASES  
THE CONTRAST  
BTWEEN THE  
SUBJECT AND  
THE  
BACKGROUND**





OM-1  
300 mm f/4  
1/2500  
ISO 200









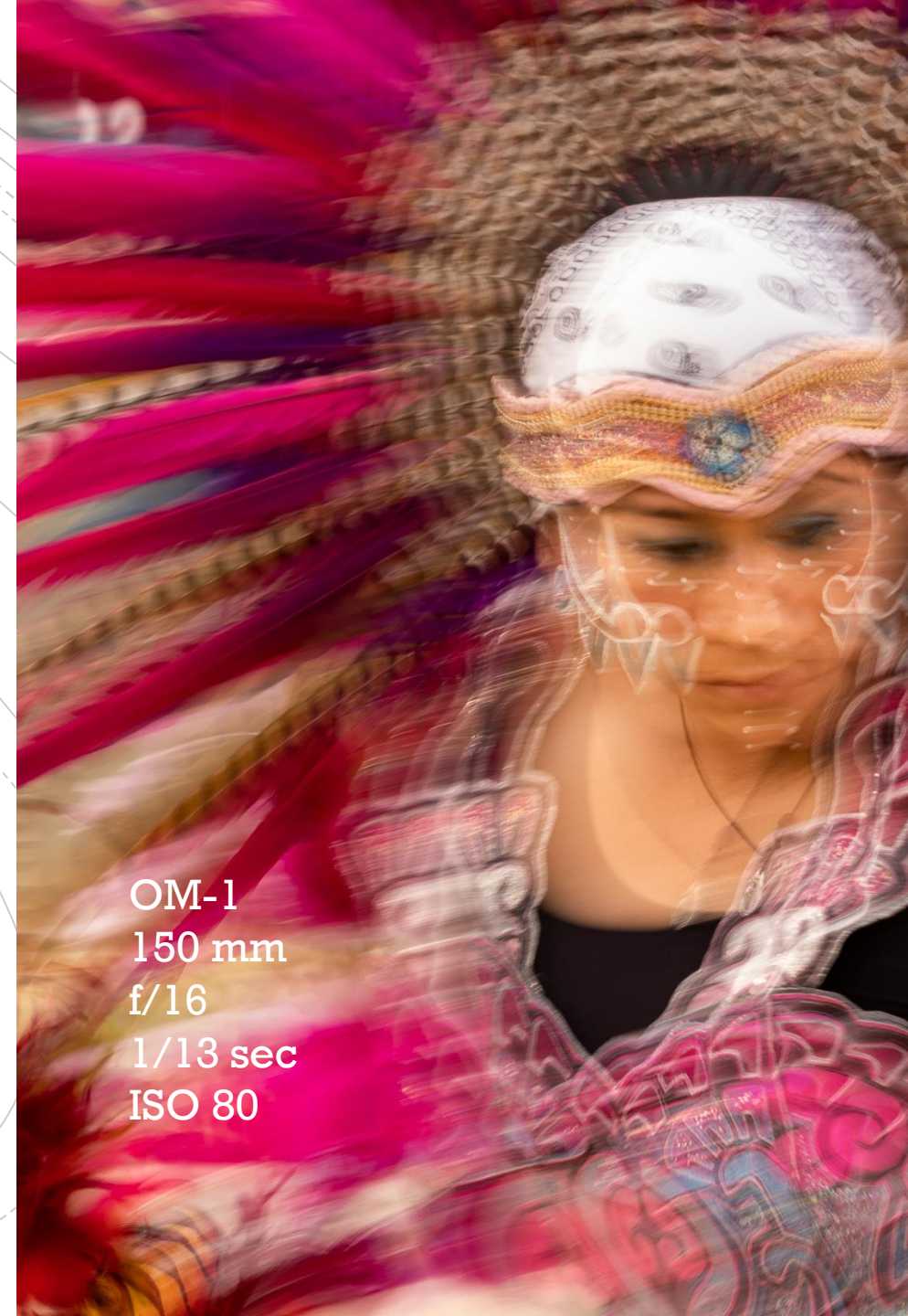
iPhone SE. Phone cameras have very small sensors which produce lots of depth of field.



# SHUTTER SPEED

THE LENGTH OF TIME THE SHUTTER IS OPEN. USED TO ADD BLUR OR TO ELIMINATE BLUR DUE TO CAMERA MOVEMENT OR SUBJECT MOVEMENT.

OM-1  
150 mm  
f/16  
1/13 sec  
ISO 80







OM-1  
115 mm f/4.5  
1/640 sec  
ISO 500



PANNING IS A  
TECNIQUE WHERE A  
SLOW SHUTTER  
SPEED IS USED TO  
KEEP A MOVING  
SUBJECT SHARP  
WHILE BLURRING  
THE BACKGROUND

OM-1  
f/22  
1/40 sec  
ISO 80  
62 mm

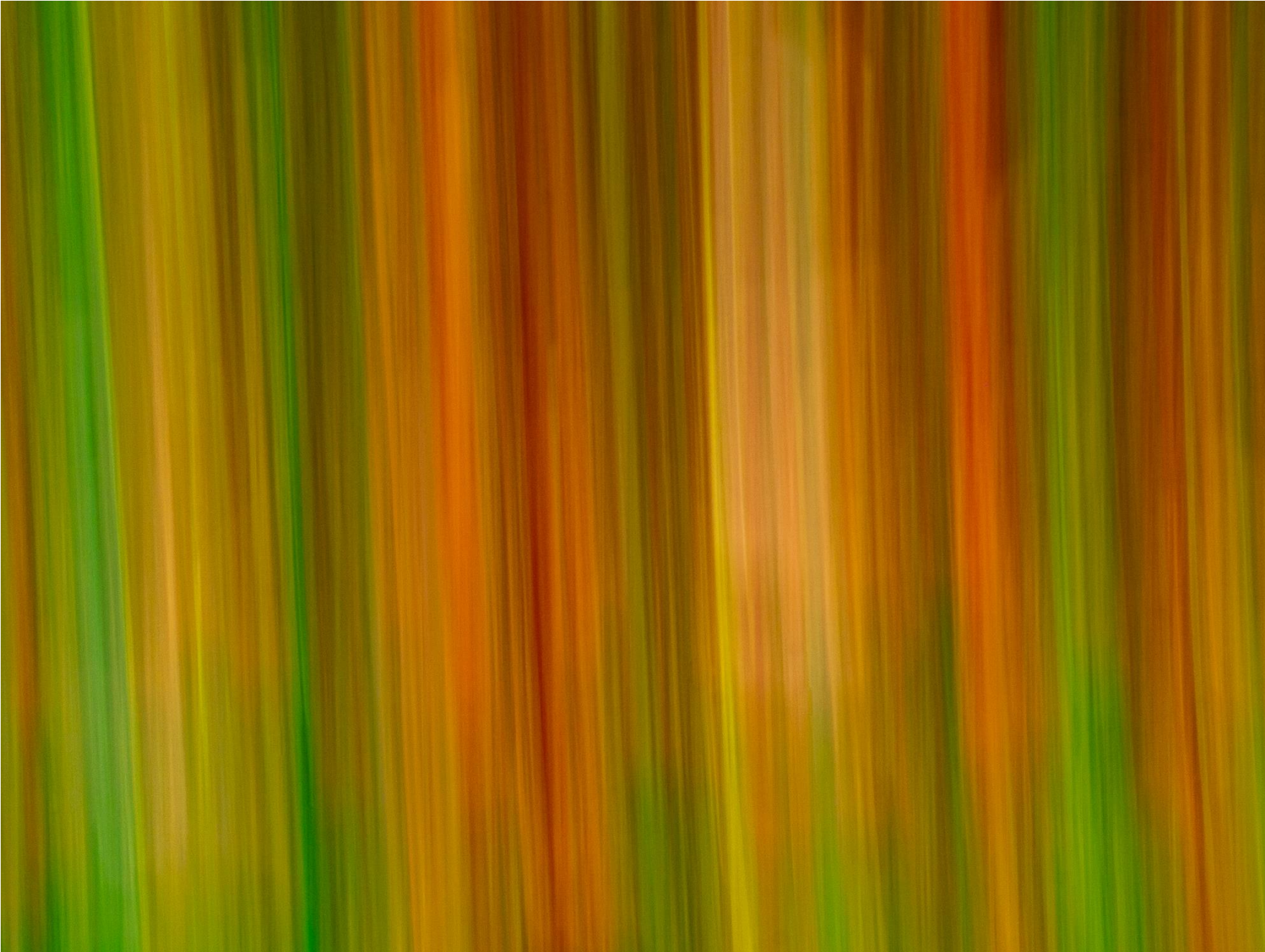




EM-1  
31 mm f/8  
1.6 sec ISO 200

I USED A TRIPOD,  
A CIRRULAR  
POLARIZER, AND  
A NEUTRAL  
DENSITY FILTER.





## INTENTIONAL CAMERA MOVEMENT

EM1 MkII  
F/22  
1/3 sec  
ISO 64  
40 mm





## ZOOMING WITH SLOW SHUTTER SPEED

EM-1 MkII

f/20

$\frac{1}{4}$  sec

ISO 64





IN SUMMARY, IF YOU WANT TO GET BEYOND THE SNAPSHOT STAGE IN YOUR PHOTOGRAPHIC ENDEAVORS, TAKE CONTROL. DECIDE WHAT IS **MOST IMPORTANT**, SHUTTER SPEED, APERTURE, OR IMAGE QUALITY. SET THAT PARAMETER AND THEN USE YOUR KNOWLEDGE OF THE EXPOSURE TRIANGLE TO MAKE IT WORK.