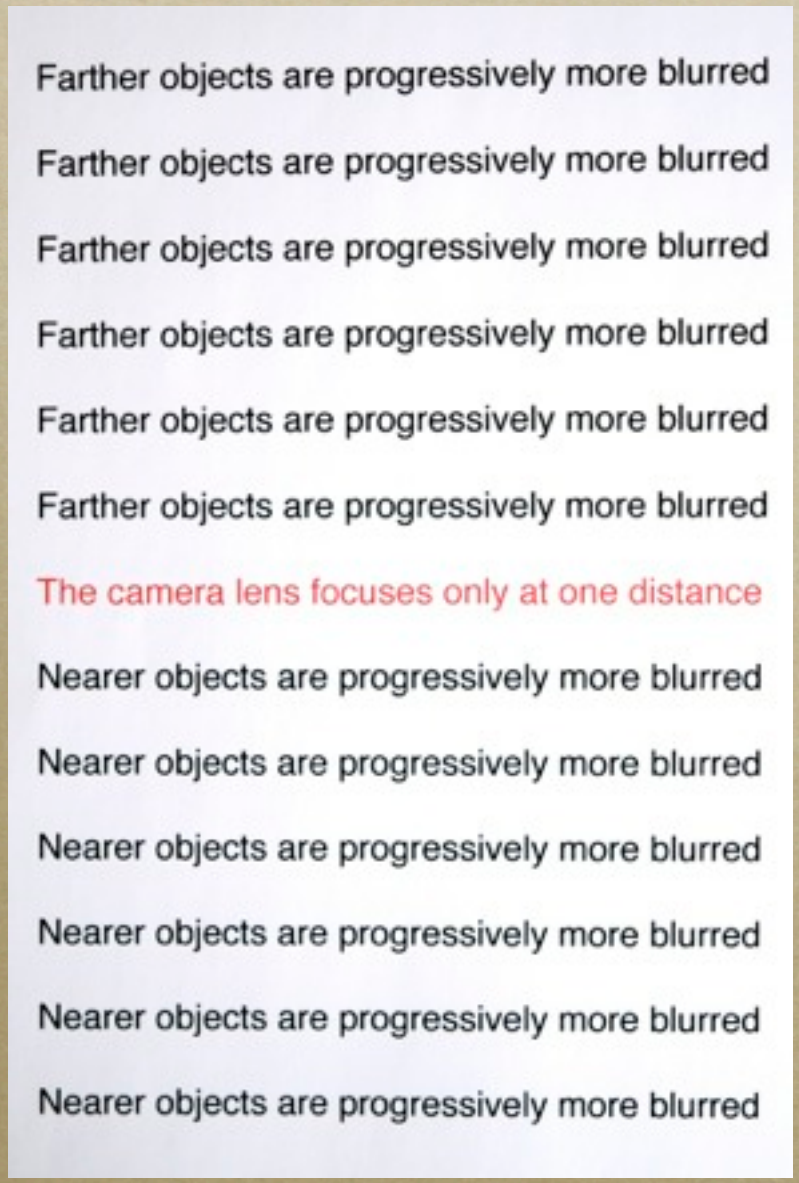
APhotos

Understanding

Depth of Field



This is square to the camera so it’s sharp all over

Farther objects are progressively more blurred

Farther objects are progressively more blurred

Farther objects are progressively more blurred

Farther objects are progressively more blurred

Farther objects are progressively more blurred

Farther objects are progressively more blurred

The camera lens focuses only at one distance

Nearer objects are progressively more blurred

Nearer objects are progressively more blurred

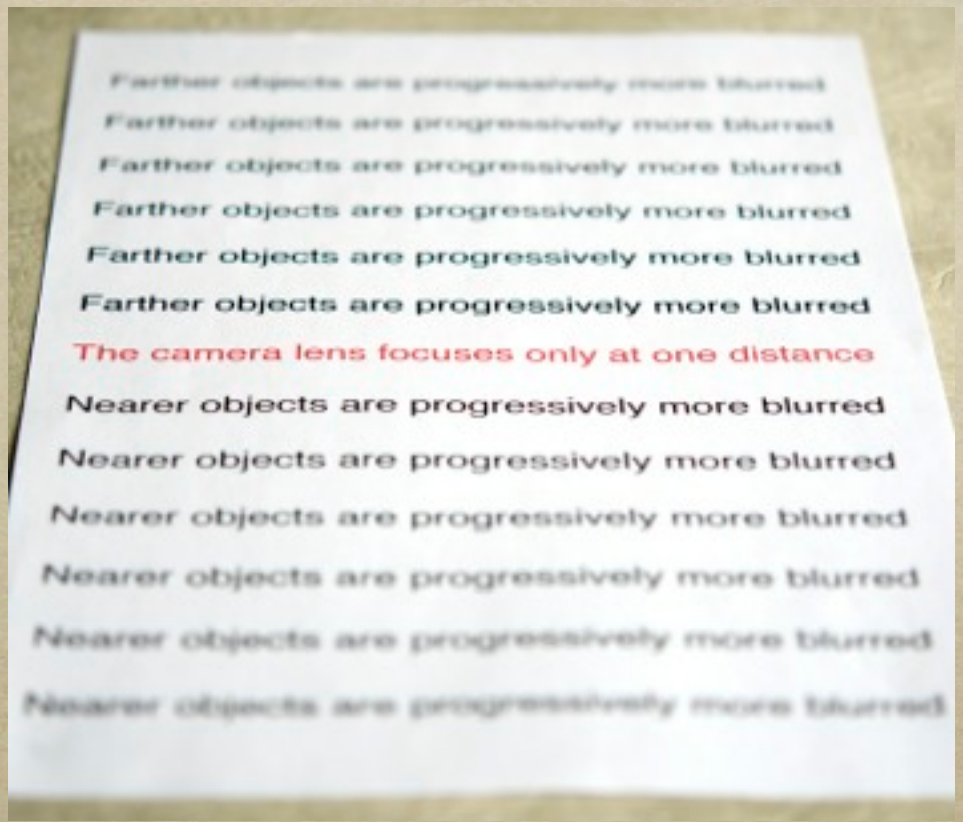
Nearer objects are progressively more blurred

Nearer objects are progressively more blurred

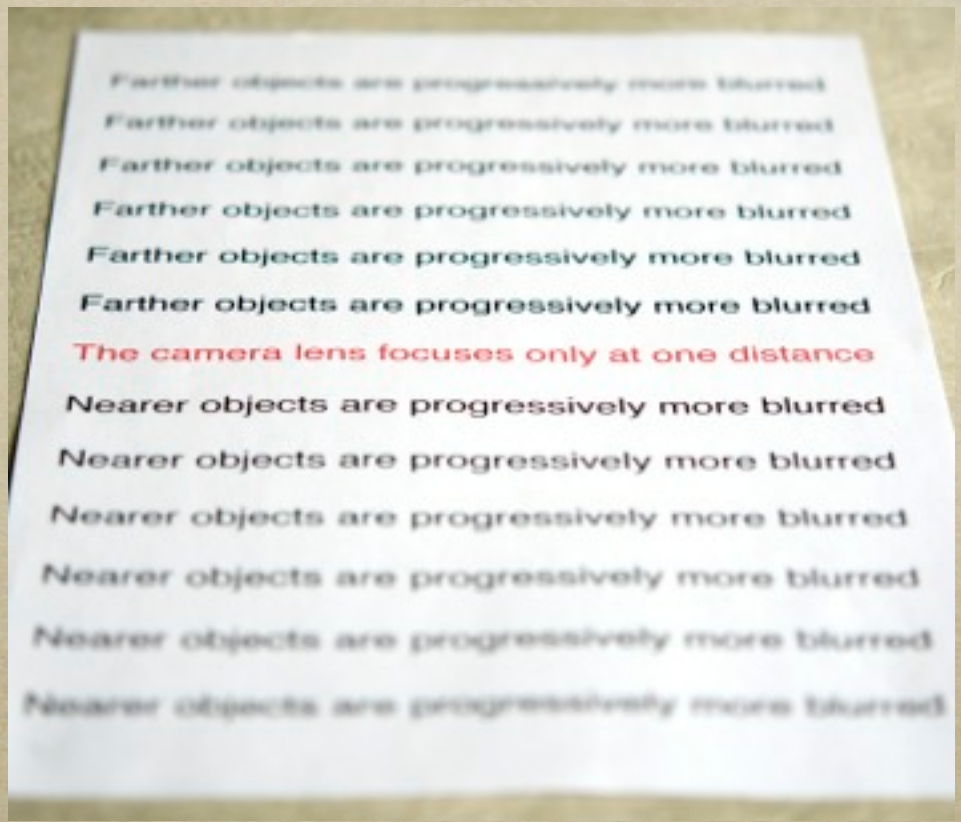
Nearer objects are progressively more blurred

Nearer objects are progressively more blurred

This is square to the camera so it’s sharp all over



But slope it and you can see how it becomes blurred away from the focus point



Our eyes can't detect a slight loss of focus so objects nearer or farther away can still appear to be sharp.

The extent of that acceptably sharp area is called **Depth of Field**

The extent of the Depth of Field is affected by a number of factors

- the focal length of the lens - long lenses - shallow depth
- how far away your subject is - closer objects - shallow depth
- the aperture - big aperture - shallow depth
- degree of blur acceptable - if you're fussy - shallow depth
- final print size - big picture - shallow depth

Since most of these factors are decided for other reasons,

the one normally used to control Depth of Field is

the aperture.

Here are some table top examples,

starting with the widest aperture :

f/ 2.8


TESCO
Three bean salad
Butter Beans
TESCO
Italian style mixed beans

f/ 2.8


TESCO
Three bean salad
Butter Beans
TESCO
Italian style mixed beans

f/ 4


TESCO
Three bean salad
Butter Beans
TESCO

f/ 2.8


TESCO
Three bean salad
Butter Beans
TESCO
Italian style mixed beans
TESCO

f/ 5.6


TESCO
Three bean salad
Butter Beans
TESCO

f/ 2.8


TESCO
Three bean salad
Butter Beans
TESCO
Italian style mixed beans
TESCO

f/ 8


TESCO
Three bean sal
Butter Bean
TESCO

f/ 2.8


CO
eas
TESC
Three bean sal
mixed beans in
salt water
Butter Bean
TESCO
Italian style
mixed bean
TESCO
ed kidney
eans
Farro
Giant
Processe

f/ 11


TESCO
Three bean salad
Butter Beans
TESCO

f/ 2.8


TESCO
Three bean salad
salt water
Butter Beans
TESCO
Italian style mixed beans
TESCO

f/ 16


TESCO
Three bean sal
Butter Bean
TESCO

f/ 2.8


TESCO
Three bean sal
salt water
Butter Bean
TESCO
Italian styl
mixed bean
TESCO
Gi

f/ 22


TESCO
Three bean salad
Butter Beans
TESCO

f/ 2.8


TESCO
Three bean salad
Butter Beans
TESCO
Italian style mixed beans
TESCO
Gi

f/ 32

The depth of field behind your subject is

about twice as much as the depth in front of it

So to get as much of your picture sharp as possible,

decide on the nearest and farthest bits you need to

to be sharp then focus about 1/3 into that area.

In this case it’s the Butter Bean tin :


TESCO
Three bean salad
Butter Beans
TESCO

f/ 2.8


TESCO
Three bean salad
Butter Beans
TESCO
Italian style mixed beans
TESCO

f/ 8

Let’s look at some more usual examples

f/ 2.8

f/ 4

One stop smaller

f/ 5.6

Two stops smaller

f/ 2.8 f/ 8 f/ 22

Hence, smaller apertures give greater Depth of Field

The focal length of the lens affects depth of field too

Wideangle

Standard

A short telephoto blurs the background a lot

You can use shallow depth of field to make

the subject stand out more

A small aperture creates

a distracting background

f/ 32

f/ 32

f/ 8

Understanding Depth of Field

- To obtain extended depth of field :

  use a wide angle lens

  use a small aperture

- To obtain shallow depth of field :

  use a telephoto lens

  use a wide aperture

- Moving closer to gain bigger magnification gives considerably less depth of field, especially with extreme close-ups

- Cameras with smaller, APS-size sensors give slightly greater depth of field than full-frame sensor cameras

Now you understand the theory

you can try it with your camera

Set your camera to Aperture Priority and set it down firmly,
preferably on a tripod

Take a series of images of the same subject,
from the widest aperture to the smallest

Compare them on your computer at about 100% magnification

Hyperfocal Distance

Suppose you want every thing to be sharp from some close point all the way back to infinity.

Focus on infinity and then check what is the nearest point that is still sharp, either by consulting tables in a book or from a scale on the lens if it has one.

This is called the hyperfocal distance.
Reset the focus to that point.
Everything will now be in focus from half way to that distance all the way back to infinity.

Hyperfocal Distance

In real life it’s much easier just to remember to

focus 1/3 into the area you want sharp !

Some Further Theory

Actually, if you take take a photo with a wide angle lens and then enlarge the centre of the picture to match the telephoto lens you get the same depth of field !

But in practice, because of the way you use them you can assume that longer lenses give less depth.

80mm at f/2.8

28mm at f/2.8

but the centre is enlarged

Notice that the depth of field

looks about the same