IN FOCUS

LEARNING OUTCOMES

Having completed this badge members will:

- demonstrate knowledge of various types of cameras;
- demonstrate the use of a digital camera;
- be able to produce some photographic images;
- demonstrate ways to display photographic images.

BADGE REQUIREMENTS

1. Explore different types of cameras.
2. Make a pinhole camera.
3. Learn some basic skills in using a camera.
4. Use a digital camera to take some photographic images.
5. Create a display of photographic images.

ADVENTURERS
SUNBEAMS

CATEGORY

Have a go

TIME FRAME

Three to Four weeks

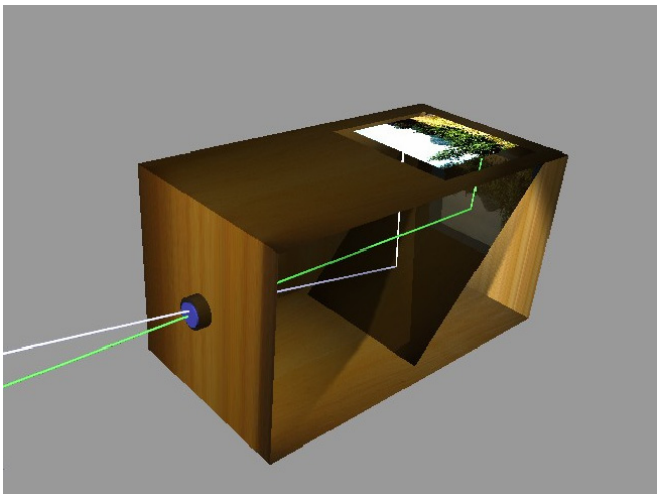
AIM

To be able to use a camera and create some photographic images.

THE SALVATION ARMY
SAGALA
GUARDING AND LEGION ACTIVITIES

THE SALVATION ARMY
YOUTH & CHILDREN'S MINISTRIES
AUSTRALIA EASTERN TERRITORY

Teaching ideas



1. Explore different types of cameras.

For centuries, images have been projected onto surfaces. Early cameras did not produce a fixed image, i.e. a still photograph, but only projected images from an opening in the wall of a darkened room onto a surface turning the room into a large pinhole camera. The phrase 'camera obscura' literally means dark chamber. While this early model camera may have had modest usage, it was an important step in the evolution of the camera.

Photography is the result of combining several technical discoveries. Long before the first photographs were made, Ibn al-Haytham (Alhazen) (965–1040) invented the camera obscura and pinhole camera, Albertus Magnus (1139–1238) discovered silver nitrate, and George Fabricius (1516–1571) discovered silver chloride. Daniel Barbaro described a diaphragm in 1568. Wilhelm Homberg described how light darkened some chemicals (photochemical effect) in 1694. The fiction book Giphantie (by the French Tiphaigne de la Roche, 1729–1774) described what can be interpreted as photography.

The modern photographic process came about from a series of refinements and improvements. In 1884, American George Eastman, developed dry gel on paper, or film, to replace the photographic plate so that a photographer no longer needed to carry boxes of plates and toxic chemicals around. In July of 1888 Eastman's Kodak camera went on the market with the slogan 'You press the button, we do the rest'. Anyone could take a photograph and leave the complex parts of the process to others, and photography became available for the mass-market in 1901 with the introduction of the Kodak 'Brownie'.

Brownie became a long-running and extremely popular series of simple and inexpensive cameras. It popularised low-cost photography and introduced the concept of the snapshot. The first Brownie was a very basic cardboard box camera with a simple meniscus lens that took six centimetres square pictures on 117 roll film. With its simple controls and initial price of US$1, it was intended to be a camera that anyone could afford and use. The camera was named after the popular cartoons created by Palmer Cox. Pictures of the first two 'Brownie' cameras are on **Leader's Resource 1**.

Teaching Ideas

Local museums may have cameras on display or members' families have old cameras stored away. The Powerhouse museum website shows a Brownie box camera dated 1930.

One of the most popular Brownie models was the Brownie 127, millions of which were sold between 1952 and 1967. The Brownie 127 was a simple Bakelite camera for 127 film which featured a simple meniscus lens and a curved film plane to reduce the impact of deficiencies in the lens.

Polaroid photography

Edwin Land, worked in the field of polarized light and in 1926 he developed the Polaroid, a form of light polarizer that had embedded aligned crystals into a plastic sheet. The Polaroid Land Camera was the first self-contained developing and printing camera. It allowed a photograph to be obtained within minutes of taking the picture. The first camera was sold in 1948 and sales finished in February 2008 due to the popularity of digital photography.

Development of digital photography

The workings of digital cameras are basically the same as manually operated cameras. The way the image is stored and the number of images that can be stored is the major difference.

The development of digital cameras revolved around the work done by Williard Boyle and George E. Smith.The essence of the digital image is the ability to transfer charge along the surface of a semiconductor.

With film cameras the number of images stored is defined by the size of the film, whereas a digital camera can store many more images, depending on the capacity of the camera's internal computer memory or memory card.

When a digital camera takes a picture light is reflected from the lenses and falls on a digital sensor. These sensors are simply computer chips called CCD, CMOS, depending on the technology used by the camera. The term megapixels indicate the number of sensors elements of the camera. The higher the number of megapixels the better the resolution of the electronic picture.

Handout 1 may be used to trace the history of photography.

Teaching ideas

2. Make a pinhole camera.

Make pinhole camera from simple items. This will take a few weeks to complete.

Pinhole cameras allow light through a tiny hole, making pictures with a soft, blurred, dreamy effect. With practice, you may be able to take sharply focused images.

Pinhole cameras usually consist of a sealed box with a pinhole on one side and photographic paper on the other side to record the image.

This home-made pinhole camera doesn't use film. You'll see the upside down image but not record it. Using greaseproof paper instead of film you can test the theory of pinhole projection for yourself and view the world upside down.

You will need the following items:

- two small cardboard boxes (same size)
- black paint, brush
- a pin
- aluminium foil
- greaseproof paper
- black electrical tape
- scissors

Method

1. Paint the insides of both boxes black.
2. When they're dry cut a small square in the centre of one side of the first box. Using a pin, make a small hole in the aluminium foil. Tape the foil to the side of the box so the pinhole is in the centre of the square you cut out. Cut off the opposite end of the box and stick a piece of greaseproof paper over it, making sure it's stuck tightly without any creases.
3. Cut out another small square in one end of the second box, just big enough to look through. Then, cut off the opposite end of the second box. Use tape to attach the open end of the second box to the greaseproof paper end of the first box. Look through the viewing hole at the greaseproof paper. Use tape to cover any holes that allow light to leak through into the box from anywhere other than the pinhole and viewing hole.
4. Take your pinhole 'camera' outside and look through the viewing hole. You should be able to see the world upside down on the greaseproof paper. If you can't see anything, try making the hole a bit bigger until you get an image on the paper. Experiment with different sized holes to find out which size gives the best effect. The hole is called the aperture: the bigger the aperture, the brighter the image. But as it gets bigger, the picture gets more out of focus.

What's happening?

A pinhole camera projects an image when light travelling from the base of an object travels in a straight line through the hole and hits the top of the surface opposite the hole. This is why the image appears upside down.

Teaching ideas

Pinhole effects were discovered long ago when people noticed images of the sun beneath trees. Overlapping leaves can form pinholes through which light passes to form a circular image of the Sun on the ground. Physicists today use multiple pinhole optics to take photos of high-energy X-rays and gamma rays from black holes and exploding stars in space.

Optional extension – To use the pinhole camera to produce a photograph replace the greaseproof paper with photographic paper. Be sure to load the camera in a darkroom as the photographic paper is destroyed when exposed to light.

3. Learn some basic skills in using a camera.

A person with photographic skills and interests may be required to teach this section.

Outline basic camera parts for members:

- viewfinder – look here;
- shutter release button – press here, opens the shutter over the lens;
- lens – the eye of the camera;
- lens cap;
- focus – clear or fuzzy, auto-focus on some cameras;
- zoom – in (close up), out (distance or wide shot);
- film placement;
- battery;
- image screen (digital only);
- memory stick (digital only).

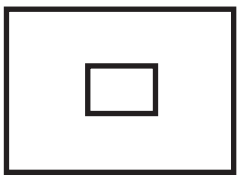
Use **Handout 2** for members to identify the basic parts of a camera.

Ask members to identify the main differences between a camera that uses a roll of film and a digital camera. Have a supply of cameras for members to handle. (Be careful not to expose film by opening a film camera if the roll is already inserted.)

Images

Explain to members that they should think about what they want to photograph and why. To think about the subject helps to construct an image successfully.

Make simple viewfinder by cutting a rectangle from the side of cereal packets and making a frame. Hold the frame with both hands in front of the body. Look through the centre to 'frame' potential images. Each image should have some sort of focal point or 'centre of attention', e.g. the rose in the vase on the table, the *Lego* bricks on the floor, the red car outside the window.



The concept of the 'frame' easily transfers to the use of the camera viewfinder helping to select and centre images. Allow members to use cameras to 'frame' potential images.

Teaching ideas

Perspective and focus

Supply a cardboard frame for each member as outlined in the previous section on *Images*.

Look through the frame at one subject, e.g. the SAGALA flags:

- by standing close to the subject, the image is bigger;
- by standing at a distance from the subject, the image is smaller.

Members practise looking at subjects from different perspectives. To get the image of the whole set of flags in the frame members need to determine how far away they need to stand. Check the image to see if there is any unnecessary clutter or distraction in the frame.

Members move their hand towards their eyes. When does the hand go out of focus? *(When it is too close to the eyes.)* Ask members to stand close to a subject. The lens on a camera is the same as a person's eyes – when the subject is too close the lens cannot focus. Members will discover that the image is fuzzy. (Note: some cameras have auto focus which activates when the shutter button is pressed halfway down, then pressed all the way down to take the photo.)

Focussing a camera is usually done by adjusting the lens rather than moving backwards and forwards. Modern cameras have adjustable zoom buttons to allow the image to be close up or at a distance.

Holding the camera

Problems that may occur	Teaching idea
Fingers in the photo Lens cap obvious in photo	Keep hands, fingers and the lens cap away from the lens when taking a photo
Shaky, blurry photo	■ Hold the camera with two hands, keeping it close to the body ■ Stand with feet slightly apart to keep steady ■ Keep breathing steady ■ Lean against a wall, post or tree if available
Subject of photo not straight	■ Hold camera straight – check in viewfinder before pressing the button ■ Make sure the horizons are horizontal

Teaching ideas

Concept of 'light' and 'dark'

A camera lens is exactly like the human eye. If you wake up during the night and there is no visible light, you cannot see anything. It is impossible to take a photo in the dark as the lens cannot make out an image. To make it possible to take a photo in the dark it is necessary to introduce light, e.g. turn on a light in the room or use a flash on the camera. Without unnecessarily frightening members, turn off all the lights to create complete darkness for a few seconds.

Sunlight or a bright light 'blinds' the eyes. An image will be blank or very washed out if the lens experiences too strong a light. When taking a photograph the sun or strong light should be behind the person holding the camera.

Pictures with a shadow

The person taking the photo has to be standing between the light source and the subject to prevent the subject from being in the shadows.

4. Use a digital camera to take some photographic images.

Photography is best described as an activity of experimentation and discovery. With the advent of digital cameras and computers photography has become a lot more cost effective. No longer is film wasted by accidental exposure and unnecessary photographs being printed. The ability to see the result (and discard if necessary) as each photograph is taken makes photography easy for children.

Have members use digital cameras to take a selection of photos. Get permission from parents for members to use their cameras. Leader's need to review member's photos and discuss the following points.

- **Subject and perspective**

Choose one subject. Take images from different perspectives: up high, down low, close, distant, from different sides, in front, from the back.

- **Hold the camera correctly**

Check that images are straight in the viewfinder and there are no obstructions to the lens from fingers or the lens cap.

- **Background and foreground**

After taking a few images check for any clutter or distraction in front of or behind the subject. A solution to this is checking what you see in the viewfinder/screen before pressing the button. If there are too many distractions, change the perspective of the subject.

- **Balance of subjects**

The best way to get a balance in photography is to choose subjects including people, places and things.

Scenario: Two children went on a camp. When they showed each other their photos they discovered something unusual. One had taken pictures of all the places on site – buildings, birds, flowers, bushland; the other had taken the friends on the camp – sitting on the bus, sleeping on the bus, getting on the bus, group photo, in the bunk house.

Teaching ideas

- **Storage of images**

Members will have various ideas on storage of images and may wish to bring some to parade.

Film Images: Prints can be stored in boxes or albums.

Digital Images: Digital Memory stick can be downloaded onto a computer or flash drive, burnt onto a CD, or printed and placed into an album.

5. Create a display of photographic images.

Discuss with members about the various options for displaying their photographic efforts.

Suggestions for displaying photographic images

- **Group display**

Organise photos into themes and display creatively. Use the display as a special function to invite friends and family to view the 'SAGALA Gallery'.

- **Individual 'scrapbook' pages**

Members choose two or three of their own photos to create a scrapbook page. Trim or shape the photos, mount them creatively, decorate the page with theme motifs, collage materials and headings/names.

- **Posters**

Create a poster using photos the members have taken, e.g. on a theme, from each patrol, publicising an event.

Members may need to make posters for other badge work, e.g. members take photos of the local environment or district for the *Nurture nature* badge.

- **PowerPoint display**

Members could create a PowerPoint presentation on a computer. The PowerPoint can be an individual, patrol or whole group effort. It is best based on a theme, to tell a story or convey information.

A PowerPoint could be used at a Church Parade to display members' work.

Leader's Resource 1

First Kodak Brownie box camera with packaging featuring the cartoon character from Palmer Cox.

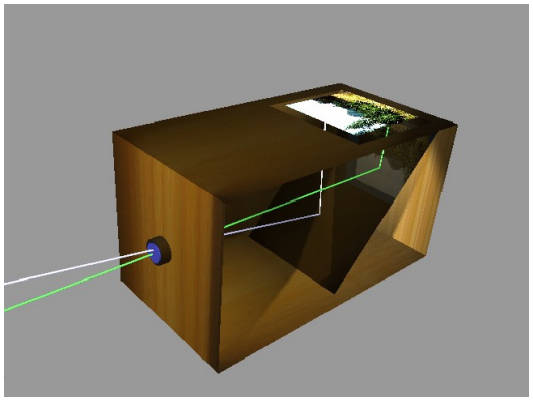
Handout 1

Adventurers/Sunbeams

Missing words: Polaroid, Kodak, cartoon, camera obscura

Dappled light through the leaves gave the first thought of capturing an image.

Draw the sun pictured on the ground beneath a tree.



_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

invented by Alhazen (965 - 1040).

Brownie box camera sold by

_ _ _ _ _ _ in 1901.

The character name came from

a popular _ _ _ _ _ _ _ _.

_ _ _ _ _ _ _ _ _ was the first self-contained developing and printing camera.

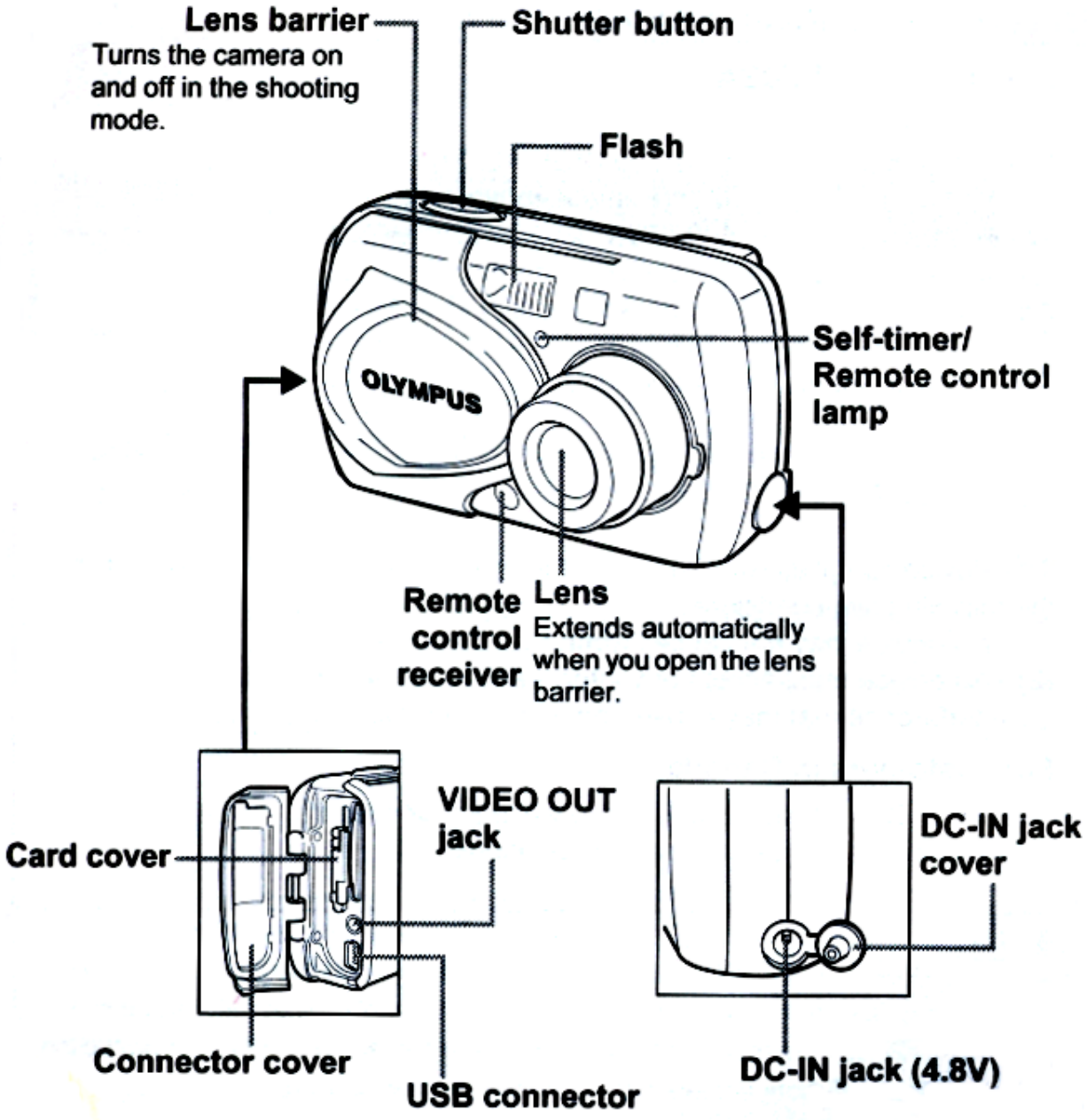
Digital camera

Paste a picture of a digital camera from a shopping catalogue in this space

Handout 2

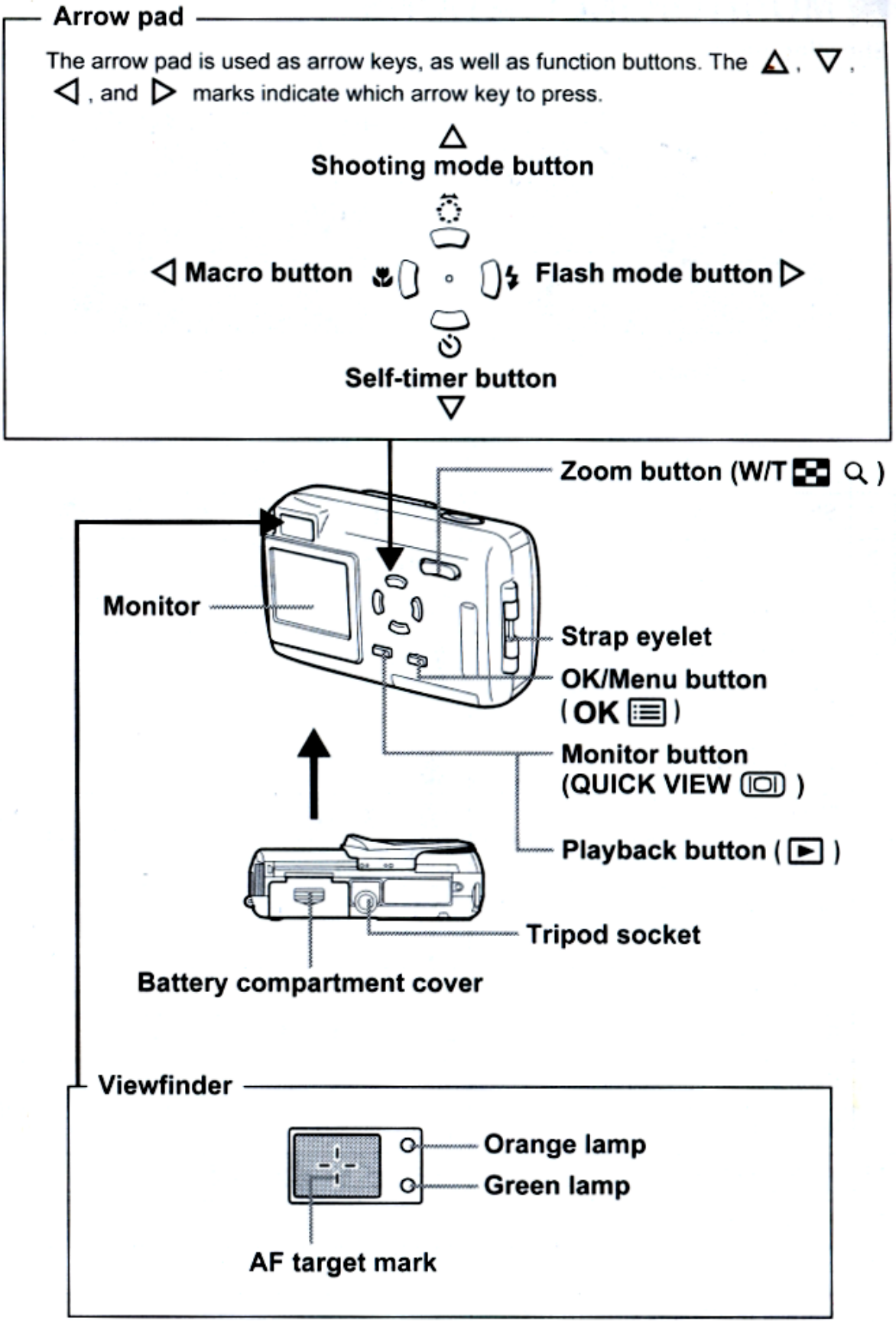
Adventurers/Sunbeams

Front of Digital Camera



Handout 2 (cont.)

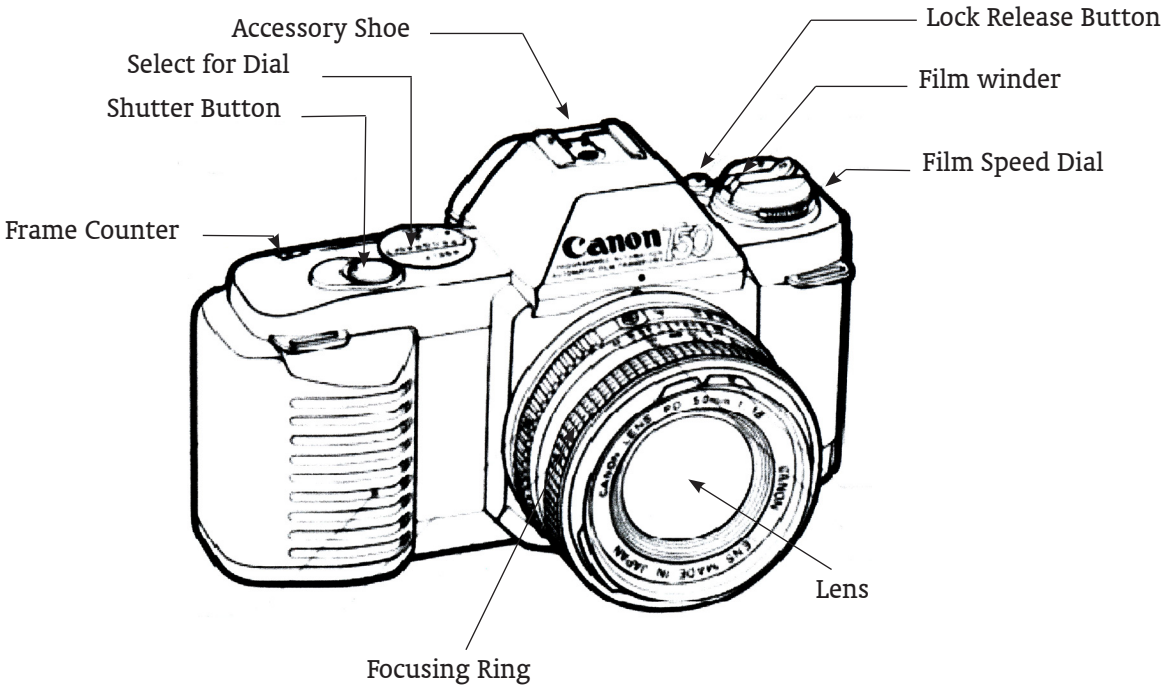
Adventurers/Sunbeams



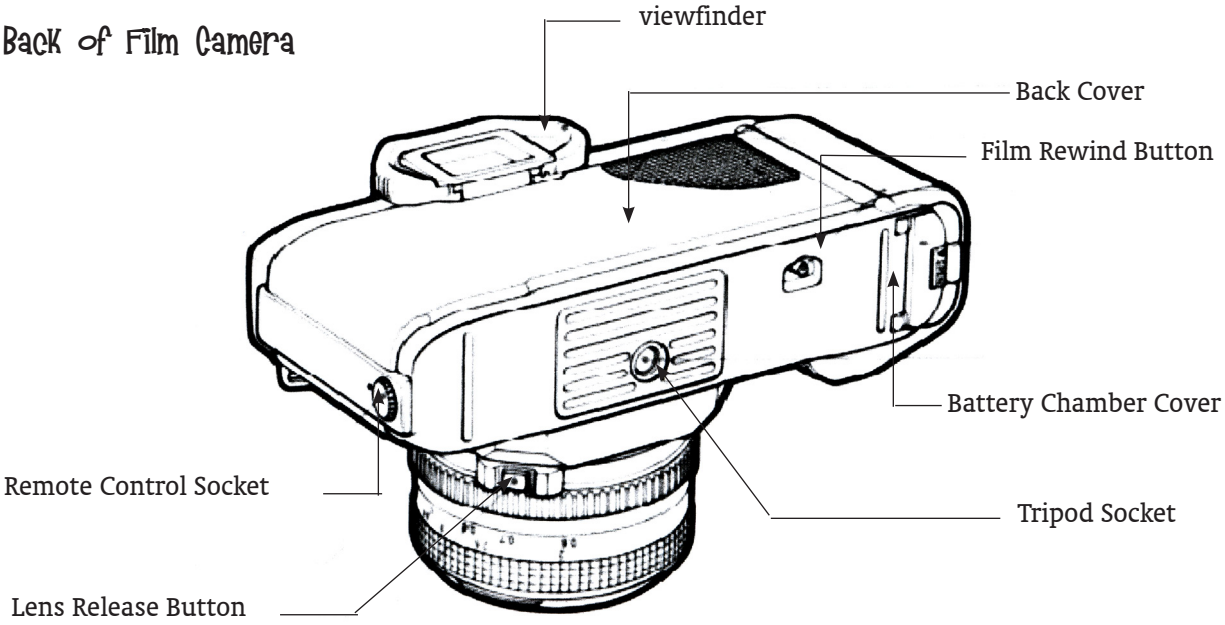
Handout 2 (cont.)

Adventurers/Sunbeams

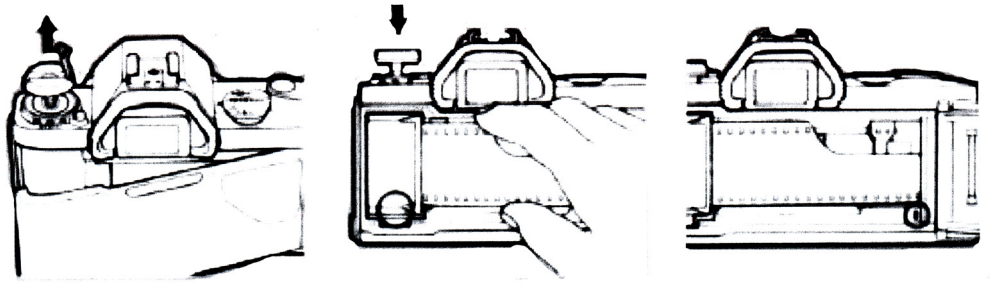
Front of Film Camera

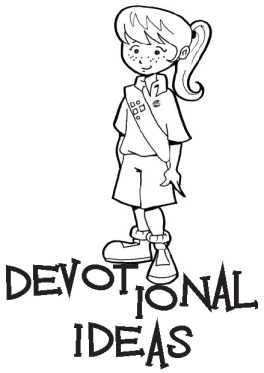


Back of Film Camera



Loading the Film





Devotional ideas

1. Title: Dot to Dot

Bible: Jeremiah 29:11

Thought: God has a purpose for our lives that is not visible to us

Supplies: Bible, a large dot to dot picture copied for every member (Make sure there are enough dots to make sure that the picture is not immediately evident), pencils, and eraser. Copy the verse onto the back so that members can take both home.

Distribute the dot to dot pictures and allow members to complete. For older members, include some missing numbers or re-number the dots to start from 50 or with multiples. Allow members to rub out if they go they wrong way.

Praise members work and then lead into comments.

Following the order of the numbers is important so we can see the finished picture. If we make a mistake its easy to rub out and try again.

Ask members if they knew what the picture was before they started.

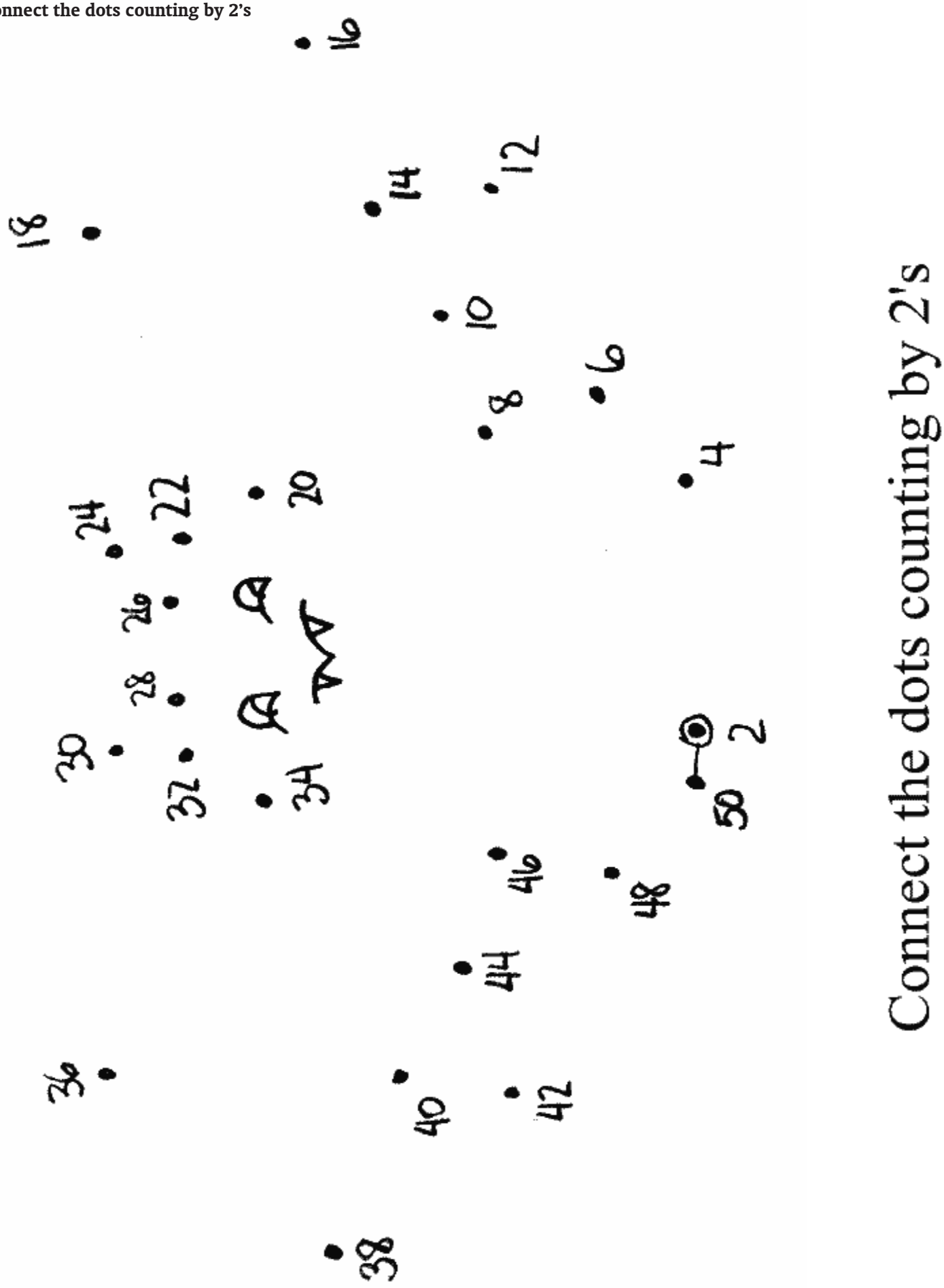
God's plan for us is a bit like following a dot to dot picture. We can't see the whole plan; instead we have to follow God's leading step by step. If we make a mistake God can rub it out when we say sorry and He'll put us on the right track again.

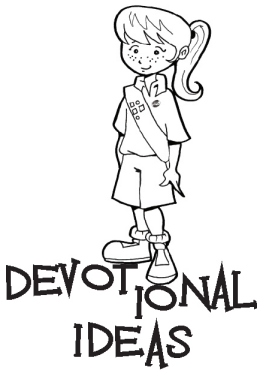
Ask the members to turn the page over and read the verse together.

Pray with members asking God to help us follow His directions and purpose for our lives. Ask for help to accept His plan for our lives.

Prayer ideas

Connect the dots counting by 2's





Devotional ideas

2. Title: Things I don't Understand

Bible: Isaiah 55:8, 9

Thought: We don't need to fully understand to know

Supplies: A Bible, a calculator, medicine e.g. Panadol, telephone, TV remote control.

The camera is a tricky thing and we may not understand how it works but we know it works. There are other things that we don't understand but know they work.

Show members the calculator. This calculator can add up, subtract, divide, multiply I don't know how it does it. How can it work out all those things and solve all those problems? I don't understand but I know it works. *I don't understand how God can work out problems but I know when I take my problem to Him He can solve it.*

Show members the medicine. This medicine is used to stop headaches and other pains that we might have. How does it know that it is a headache or a tooth ache? How does it know where to go? I don't understand but I know it works. *I don't understand how God knows when I'm hurting but He can heal the deepest hurt and pain. He knows exactly what we need in every situation I don't know how but I know He can.*

Show members the telephone. This telephone can call anybody in the world whose number I know. It can get my voice to them just as if they were sitting next to me. I don't understand but I know it works. *I don't understand how God can talk to me from way up in heaven but He can. I can talk to Him and He listens patiently and answers me. I don't understand how prayer works but I know it does.*

Show members a TV remote control. This control changes the station on the TV. It can turn the volume up and even turn the TV off. I can sit in my chair and not move and change the channel whenever I want. I don't understand how it works but I know it works. *I don't know how God can sit on His throne in heaven and control things on earth but I know God is in control.*

Pray with members thanking God that we don't have to understand things but we know He is in control.

Devotional ideas

3. Title: Focus on Jesus

Bible: Luke 10:38 - 42

Thought: Keeping our focus on what is most important

Supplies: A Bible, a digital camera

Ask a member to volunteer to have their photo taken. Hold the camera up facing toward yourself and snap the photo. Look at the photo results on the camera. Take another picture, but this time focus the camera on the volunteer. Show members the photos.

When taking pictures, it is very important to make sure you are focused on the right thing. It is foolish to try to take a picture without the camera focused on (the subject – name the volunteer). In our daily life, it is important that we focus on the right thing too. Sometimes, we forget what is important and we focus on all the wrong things. That is what this passage from the Bible talks about.

Read Bible passage.

Martha made the mistake of focusing on herself rather on Jesus. Mary, on the other hand, was totally focused upon Jesus and what he was teaching. Jesus said that she had chosen the right thing.

As you live your daily life, are you worried and troubled about many things that are not really important, or are you focused on Jesus, the one thing that is really important?

Dear Jesus, we love you. Help us to keep our focus on you each and every day. Amen.