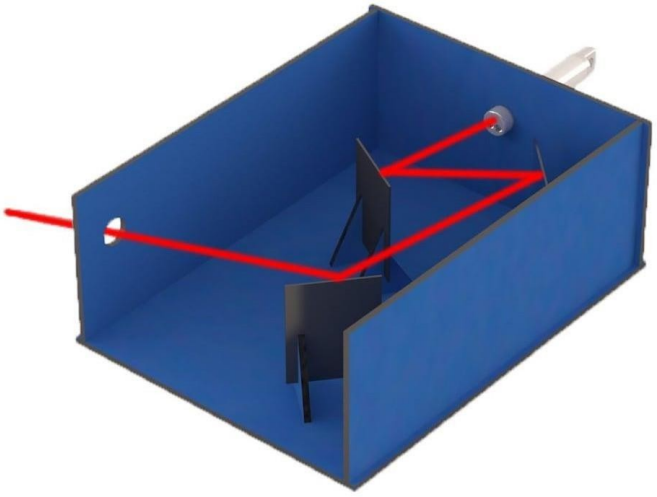
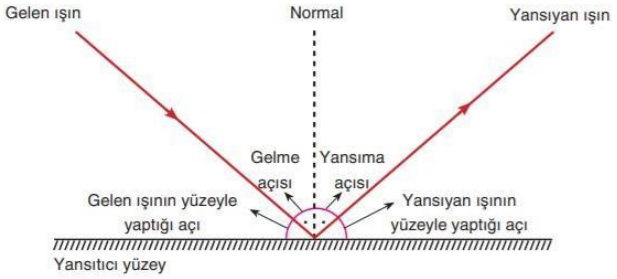
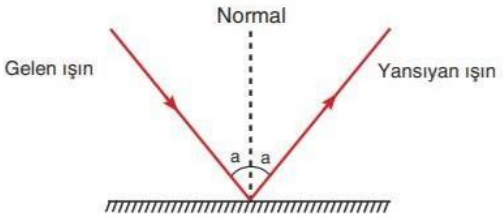
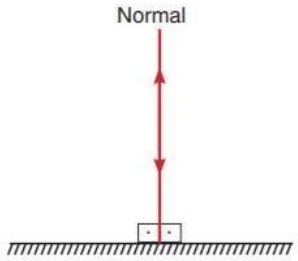
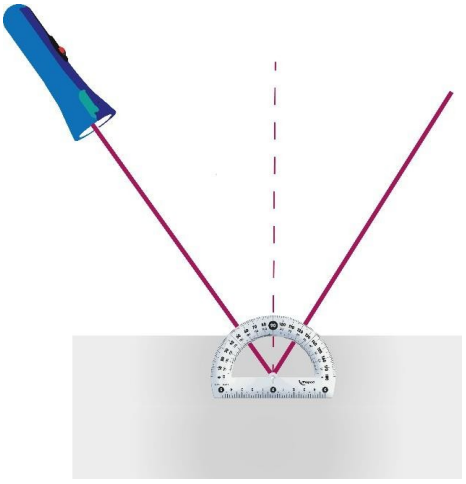
Classroom	**9**
Unit Name	**Angles**
Learning Area	**Maths**
Outcomes	
Science	Explains the relationship between the incident ray, reflected ray and the normal of the surface in the reflection of light. Observes that the light from a source follows a linear path in all directions and shows it with a drawing.
Maths	Constructs the measured angle using standard angle measuring tools.
Technology and Engineering	✓ Solar Tunnel designs ✓ Makes Sun Tunnel drawing ✓ A problem, need, or a problem encountered in daily life his dream that he can realise as a "design problem". ✓ Explains the stages necessary to create the design. ✓ Makes draft drawings for design.
Social Studies	Uses the resources around him/her without wasting them.
21st century skills	Critical thinking and problem solving Creativity Technology literacy Imagination
Introduction	Enter the classroom with a box in your hand. Teacher: What are your guesses about the box in my hand? She asks the question.
Discovering	**Heterogeneous groups are formed.** Firstly, the laser brought to the classroom is switched on and ideas are taken on how the light emitted looks like. Drawings are made in their notebooks. They are expected to observe that the light is a straight line. Observations are asked to be noted. Abox containing a mirror is brought to the classroom and a hole is made on one of the 4 surfaces of the box. on the neighbouring surface of the first hole. Another hole is located on the neighbouring surface of the first hole. When we hold the laser in our hand to the first hole, it is seen that it comes out of the other hole.

	This event explored by giving students the chance to experience it one-on-one. As a result of the discovery, they are asked to write their observations and predictions. **A sample of the mirror in the box will be given to the students and the following instructions will be made to discover the laws of reflection.** 1. By changing the mirror angles, it is discovered from which other points the laser light can exit the box. 2. New points are identified and new holes are drilled.  **During the discoveries on the box, the teacher guides the process in the desired direction move forward.**
Description	**How Light Propagates** Light is an energy. Light rays from a light source emit light along lines in all directions. Light propagates linearly. Light is shown by drawing rays. As long as there is no obstacle in front of the light rays, it continues its progress. Light propagates in transparent media (air, water, glass ...) and in a vacuum. Light does not need a material medium to propagate. These lines are **rays** or **light rays**. **What is reflection** **Reflection** is when light hits a surface and returns to the medium from which it came. Light must be reflected in order to see objects. The Moon is not a source of light, it is visible because it reflects the light it receives from the Sun. **Laws of Reflection** Reflection takes place according to certain rules. 1. Incoming beam, reflected beam and normal are in the same plane. 2. Angle of incidence and angle of reflection are equal to each other. 3. The ray coming through the normal is reflected back in the same way. The angles of incidence and reflection are 0º)

	Yansıtıcı yüzeylere gelen ışın belli kurallara göre yansır. Işık kaynağından bir yüzeye ulaşan ışına **gelen ışın** denir. Bu yüzeyden geldiği ortama geri dönen ışına ise **yansıyan ışın** denir. Gelen ışının düştüğü yüzeye dik olarak çizilen çizgi **yüzeyin normali** olarak adlandırılır. Yüzeyin normali ile gelen ışın arasındaki açıya **gelme açısı**, yüzeyin normali ile yansıyan ışın arasındaki açıya ise **yansıma açısı** denir.  Yüzeye gelen ve yüzeyden yansıyan ışınların nasıl bir yol izleyeceğini yansıma kanunları ile açıklayabiliriz. **YANSIMA KANUNLARI** Yansıma kanunları aşağıdaki gibidir. ✔ Gelen ışın, yüzeyin normali ve yansıyan ışın aynı düzlemdedir. ✔ Gelme açısı, yansıma açısına her zaman eşittir.  ✔ Yüzeyin normali üzerinden gelen ışık ışınları kendi üzerinden geri yansır. 
Deepening	INTEGRATION 

Angle measure unit
The standard angle measurement unit is degree. Obtained by dividing a right angle into 180 equal parts
The angle of one unit is called 1 degree. The degree is indicated by the symbol " º ".

What is the angle measured with
The angle is measured with a "protractor", also known as a "protractor".
Angle types
Angles are grouped as acute angle, right angle, obtuse angle and right angle.

acute angle : It is an angle whose measure is less than 90 degrees. Right angle : It is the angle whose measure is 90 degrees.
Wide angle: An angle with a measure between 90 degrees and 180 degrees. Right angle: It is an angle whose measure is 180 degrees.

This activity will realise the skill of angle measurement.

- ✓ The angle of incidence and the angle of reflection in the box used in the exploration are measured with a protractor and noted.
- ✓ *It will determine the angles of emergence from different holes in the box.*
- ✓ They are asked to classify angles as narrow and wide.

INTEGRATION
Examples from Sun Tunnel applications are shown.

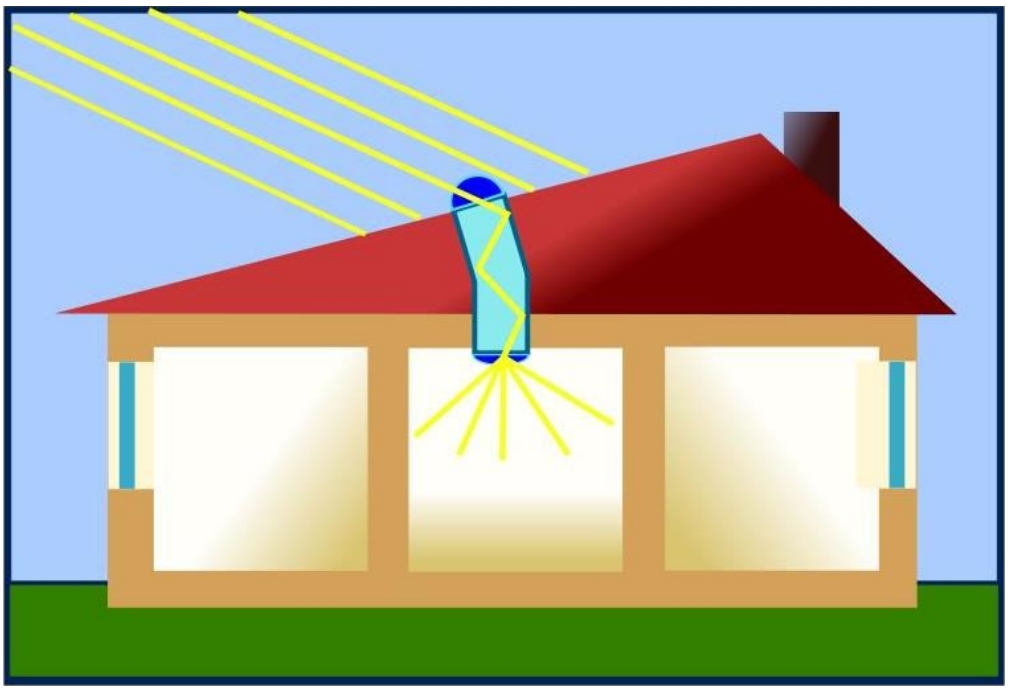
Problem situation: You have just bought a new house, but because there are not enough windows on the upper floors, the day
you are having trouble utilising the light. Due to this situation, electric lighting
you lose a lot financially for using it
is happening. **How to solve this situation would you design and build a solar tunnel?**

Examples from Sun Tunnel applications are shown.

1. Solar tunnel research
2. Collection of information about the solar tunnel
3. Drawing according to the collected data
4. Designing a sun tunnel with drawing
5. Trial and review of the solar tunnel
6. Reorganisation

Required Ingredients

- Coloured Cardboard
- Scissors
- Ruler
- Aluminium foil
- Acrylic Transparent part
- Silicone gun
- Hot silicone



SOCIAL INTEGRATION

After brainstorming ideas on how this activity can contribute to the family economy, the importance of saving is emphasised.

Evaluation	

Qualifications	Should be improved	Good	Perfect
Sun tunnel creation	The solar tunnel is not at the desired level and is not fully unfinished	Sun tunnel created	Sun tunnel created and visualised
Sun tunnel durability	Flimsy	Durable	Very durable
Sun tunnel evaluation	No evaluation on the solar tunnel	No evaluation on the solar tunnel	No evaluation was made on the sun tunnel and it was re-evaluated after the evaluation. designed
Sun tunnel introduction and process Sharing	Sun tunnel the familiarisation process is bad Made	Sun tunnel the familiarisation process is good Made	Sun tunnel the familiarisation process is very well done
Solar tunnel light transmission amount	Sunlight into the room could not be delivered	Good level of sunlight into the room delivered	Very good sunlight into the room delivered at the level