

NTI

7th

Grade

Day

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# 1<sup>st</sup> Grade NTI Day # 7



## Adding & Subtracting Negative Numbers

Name: \_\_\_\_\_

Solve each problem.

- 1)  $(-33) + 47 =$  \_\_\_\_\_
- 2)  $(-30) - (-82) =$  \_\_\_\_\_
- 3)  $(-2) + 68 =$  \_\_\_\_\_
- 4)  $(-36) + (-58) =$  \_\_\_\_\_
- 5)  $11 - (-23) =$  \_\_\_\_\_
- 6)  $42 - (-20) =$  \_\_\_\_\_
- 7)  $(-652) - 491 =$  \_\_\_\_\_
- 8)  $990 - (-118) =$  \_\_\_\_\_
- 9)  $5 - (-7) =$  \_\_\_\_\_
- 10)  $2 + (-7) =$  \_\_\_\_\_
- 11)  $(-17) \div (-22) =$  \_\_\_\_\_
- 12)  $(-152) - 183 =$  \_\_\_\_\_
- 13)  $(-1) + (-7) =$  \_\_\_\_\_
- 14)  $2 - (-3) =$  \_\_\_\_\_
- 15)  $(-909) + 458 =$  \_\_\_\_\_
- 16)  $981 + (-257) =$  \_\_\_\_\_
- 17)  $(-7) - (-8) =$  \_\_\_\_\_
- 18)  $(-987) - (-403) =$  \_\_\_\_\_
- 19)  $600 - (-927) =$  \_\_\_\_\_
- 20)  $839 + (-425) =$  \_\_\_\_\_

## Answers

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_



Name: \_\_\_\_\_

# Lesson 11 <sup>7th - NTI Day 7</sup>

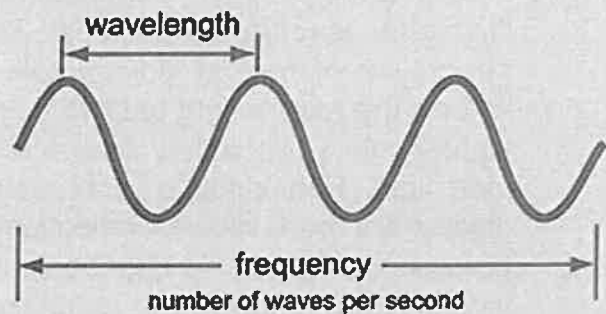
## Sound and Light Energy

Observing our surroundings, we often encounter waves in various forms. Consider an instance when you witness a companion plunging into a swimming pool - waves emanate from the point of their entry, rippling across the pool's surface. This observable phenomenon is the effect of the jumping force compelling water molecules to oscillate. Similar oscillations are instrumental in the propagation of light and sound, demonstrating how waves serve as carriers of energy.

**Sound waves** have the remarkable capability to permeate through gasses, liquids, and solids, although they are unable to traverse empty spaces. The genesis of sound waves is linked to vibrations.

Imagine the act of rapping on a door, a movement that prompts molecules in both the door and the surrounding air to tremble. These oscillations, in turn, stimulate neighboring particles to vibrate. Once these tremors disperse through atmospheric gasses and reach your auditory system, you perceive the distinct sound of a knock. **Frequency**, the rate of these particle vibrations, measures how rapidly they vibrate. In other words, frequency quantifies the number of sound waves produced each second. Higher frequency denotes rapid vibrations, resulting in a sound with a high pitch.

**Frequency Diagram**



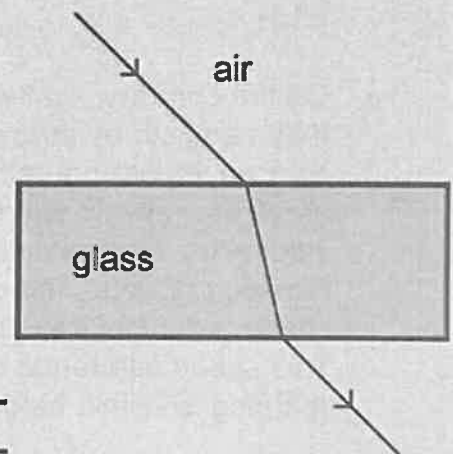
On the contrary, light waves differ significantly from sound waves, in that they can journey through empty spaces. This is attributed to the fact that light waves are not reliant on particle vibrations. Light is an instance of an **electromagnetic wave**, possessing both electrical and magnetic influences. Occasionally, such electromagnetic waves are termed as radiation or rays. The speed of light waves surpasses all in the vacuum of space, with light traveling approximately a million times faster than sound. This speed difference becomes apparent during a thunderstorm when lightning is visible before the thunderclap is audible.

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Light energy, upon encountering matter, can transform into heat energy. Materials classified as **opaque**, such as the majority of fabrics, wood, concrete, and metals, have the ability to absorb light. Such materials obstruct light passage entirely, with a fraction of the light energy being absorbed. Darker shades absorb more light, leading to greater heat generation compared to lighter colors. Hence, on warm sunny days, it's advisable to don lighter hues. Semi-transparent, or **translucent** materials, like tissue paper and certain garments, permit partial light passage while absorbing a portion of it. **Transparent** materials, including glass and water, almost entirely allow light passage without absorbing it.

**Reflection** is another intriguing phenomenon where light, instead of absorption or passage, bounces off a surface. The smoother the surface, the higher its reflection potential. Reflective surfaces are easily found in objects like mirrors, smooth metals, and dishware. A mirror, for instance, reflects the room's light back to you, enabling you to see your reflection. Lighter colors, since they absorb less light compared to dark shades, reflect more light. This principle becomes evident in a dimly lit room, where lighter objects are more visible. Reflection and absorption processes explain our perception of colors - a blue book, for example, absorbs all colors except blue, which it reflects back to our eyes.

Ever noticed how a straight straw appears bent when immersed in water? This optical illusion is the effect of light changing speed, and hence direction, when transitioning between mediums, in this case, air to water. This light bending phenomenon is called **refraction**, which also occurs with other materials like glass. If you look at the *Refraction Diagram* below, you'll notice the bending, or change in direction, of light waves when they encounter the glass.



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Name: \_\_\_\_\_

# Lesson 11 *7th - Day 7*

## Sound and Light Energy

1. What causes waves in a pool when someone jumps in?

- A. The water temperature
- B. The force of the person jumping
- C. The depth of the pool
- D. The size of the person jumping

2. Which of the following cannot travel through empty space?

- A. Sound waves
- B. Light waves
- C. Electromagnetic waves
- D. Heat waves

3. What causes sound waves?

- A. Refraction of light
- B. Reflection of light
- C. Vibrations
- D. Electromagnetic waves

4. What is the frequency of sound waves?

- A. The number of light waves per second
- B. The number of sound waves per minute
- C. The number of sound waves per second
- D. The speed of sound waves

5. Why can light waves travel through empty space?

- A. They are a vibration of particles
- B. They are not a vibration of particles
- C. They are made of solid particles
- D. They are made of liquid particles

Name:

# Lesson 11 *7th-Day 7*

## Sound and Light Energy

6. What happens when light energy hits matter?
- A. It turns into sound energy
  - B. It turns into heat energy
  - C. It disappears
  - D. It becomes stronger
7. What kind of materials do not let any light pass through them?
- A. Transparent materials
  - B. Translucent materials
  - C. Opaque materials
  - D. Reflective materials
8. What happens when light does not absorb or pass through matter?
- A. It disappears
  - B. It is refracted
  - C. It is absorbed
  - D. It is reflected
9. Why do we see colors?
- A. Because light waves are colorful
  - B. Because colors absorb all the light
  - C. Because of the reflection and absorption of light
  - D. Because colors emit their own light
10. What is refraction?
- A. The bending of light
  - B. The reflection of light
  - C. The absorption of light
  - D. The vibration of light



## Lesson #7

## The Start of Negotiations



he moment he had spoken, Saint George was sorry for what he had said, as the Boy looked so genuinely distressed:

"I assure you, Saint George," he said earnestly, "there's nothing of the sort in the cave. The dragon's a true gentleman, every inch of him, and I may say that no one would be more shocked and grieved than he, at hearing you suggest he would do such a thing."

"Well, perhaps I've misjudged the animal," said Saint George. "Perhaps. But what are we to do? Here are the dragon and I, almost face to face, each supposedly thirsting for each other's blood. I don't see any way out of it. What do you suggest? Can you arrange things, somehow?"

"That's just what the dragon said," replied the Boy, rather nettled. "Really, the way you two seem to leave everything to me—couldn't you be persuaded to go away quietly?"

"Impossible, I fear," said the Saint. "Quite against the rules. You know that as well as I do."

"Well, then, look here," said the Boy, "it's early yet—would you mind strolling up with me and seeing the dragon and talking it over? It's not far, and any friend of mine will be most welcome."

"Well, it is *irregular*," said Saint George, rising, "but really, it seems about the most sensible thing to do. You're taking a lot of trouble on your friend's account," he added, good-naturedly. As they passed out through the door together, he added encouragingly, "Cheer up! Perhaps there won't have to be any fight after all."

"Oh, but I actually hope there will, though!" replied the Boy, wistfully.

Saint George and the Boy traveled, conversing and planning along the way, to the cave up on the Downs, which was the home of the dragon.

"I've brought my new friend to see you, dragon," the Boy called, as they approached the cave.

The dragon woke with a start. "I was just—er—thinking about things," he said in his simple way. "Very pleased to make your acquaintance, sir. Charming weather we're having!"

"This is Saint George," the Boy cut in. "Saint George, let me introduce you to the dragon. We've come up to talk things over quietly, dragon, and now for goodness' sake, do let us have a straight common-sense talk. We must come to some practical businesslike arrangement, for I'm sick of views and theories of life and personal tendencies, and *all* that sort of thing."

RL.7.1 1. According to Saint George, why can't he go away without fighting the dragon?

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- RL.7.2 2. What is the main idea of this section of the story?
- A) After the Boy explains the nature of this dragon to Saint George, they set off to find a businesslike arrangement.
  - B) Neither the Boy nor Saint George want to save the dragon by cancelling the fight.
  - C) The Boy introduces Saint George to the dragon, who initially is quite pleasant.
  - D) The Boy wonders why saving the dragon's life has become his responsibility and secretly hopes Saint George will leave town.

- RL.7.4 3. Match each word with its clue.

- |                  |               |
|------------------|---------------|
| _____ earnestly  | A) yearningly |
| _____ grieved    | B) leanings   |
| _____ nettled    | C) sincerely  |
| _____ wistfully  | D) saddened   |
| _____ tendencies | E) annoyed    |

- RL.7.3 4. Based on the story so far, complete the Venn diagram.

- A) refuses to fight
- B) is the second one to suggest the Boy find a solution
- C) ends up on the Downs because of an earthquake-like event
- D) comes to the town when he hears that his services are needed
- E) has learned many things by reading books
- F) expected by the villagers to fight
- G) does not believe he can leave town without fighting
- H) introduces one opponent to the other
- I) believes it is his duty to fight
- J) meet to negotiate on the Downs
- K) a writer of poetry
- L) defends the character of his friend
- M) would be shocked to hear anyone thinks he has kidnapped a princess
- N) suggests one combatant chat with the other
- O) is dismayed to learn the townspeople are betting against him
- P) have been friends the longest

