Thermal Energy Bundle Contents

Click the items in the list below to jump to that part of the PDF.

Thermal Energy Bundle

by Science Doodles

Directions

Click the blue headings to jump to that part of the PDF.

This unit bundle PDF includes:

1. Foldable: The Movement of Heat

This is a great visual to show all three processes in the same picture. Students can color and fill in the blanks to label the arrows of how heat moves. The PowerPoint shows the KEY which makes it easy to teach and discuss while students fill in the blanks. Black and white student copy and KEY included.

2. Foldable: Thermal Heat Transfers

This helps students understand the difference between heat and thermal energy. The PowerPoint shows the KEY which makes it easy to teach and discuss while students fill in the blanks. Black and white student copy and KEY included.

3. Vocabulary Set

There are a variety of ways to use these. There are several versions for differeniated abilities. For slow learners, you can give them the sheet with the definitions already written out, and for other students, give them the blank sheet included in the unit. The powerpoint has each word displayed with the definition and a colored drawing to help the student fill out their sheets. These are a great study guide for weekly warm-up and task cards activities. Black and white and color keys included in full and partial sets for slower learners

4. PowerPoint

The PowerPoint is used to introduce the unit and help students fill out their vocabulary sheets and foldables. Keys to the vocabulary sheets and foldables are shown in the slides. Give students vocabulary sheets and blank foldables before presenting it to the class. It has a 10 question quiz at the end to check for understanding. **The PowerPoint is not found in this PDF file but is included in the main unit bundle folder.**

5. Task Cards

My room is not set up to put all the students in a circle, so we go in the hallway to do this activity. I have the students bring their blank answer form into the hallway with a pencil.

I usually make them sit boy/girl/boy to keep them better behaved. I pass out the cards in order of the numbers. (This is important for order.) Give the first student number 1 and then number 2 next and so on. I stand in the middle of the circle and hold a bell. I tell the students to all answer their card and quietly hold it up in front of their face when they are finished and ready for the next question. I ring the bell and they all pass their cards to the next person. I watch them and ring the bell when I notice they are ready. They all answer the next card and pass it on only when the bell sounds. At the end of the activity, we go back in the room and I put up the answer key on the overhead. They check and grade them. I call out card numbers and if anyone missed a question, I read it in class and we discuss it. I call on someone who got it right to explain it. I LOVE task card activities. It is a great way to check for understanding before the test. I have found that my students do much better on the test after going through this activity. They like doing them, too. One teacher I know uses them as a station or in pairs. Another option is to put each card under the projector, one at a time. The students answer each question and grade and turn in their answer sheets.

Key included

6. Science Weekly Warm-up

This year my classes are very short and I don't have a lot of time for warm-up, but I want the students to come in my class, be quiet, and gear up their brains for science. This is a quick, easy tool to do just that. I really love how it is quick and simple and we can get right to the lesson. I take them up Friday for a daily grade. Another option is use them for an exit ticket quiz or homework assignment.

Key included

7. Everything I Learned This Year Glue-in

This is a list of all the concept topics that we will cover this year in science. I will offer a bundle on each of the concepts. You can have your students glue the list to the inside front cover of their interactive notebooks. My students check off each concept as we learn it.

I include an editable copy for teachers that want to customize this.

The font used is KG Turning Tables

Also included in folder:

Movie for Printing and Folding Foldables

The best way to print the foldables is to watch the movie before going to the printer so you can know the orientation of how to print them front to back. After printing the foldables correctly, either show the videos to the students or instruct students how to fold the foldables. My students love to watch them and see if they can get it. Replay several times if necessary.

PowerPoint

Great overview of unit with vocabulary and foldable KEYS and a short quiz at the end.

More Science Doodles

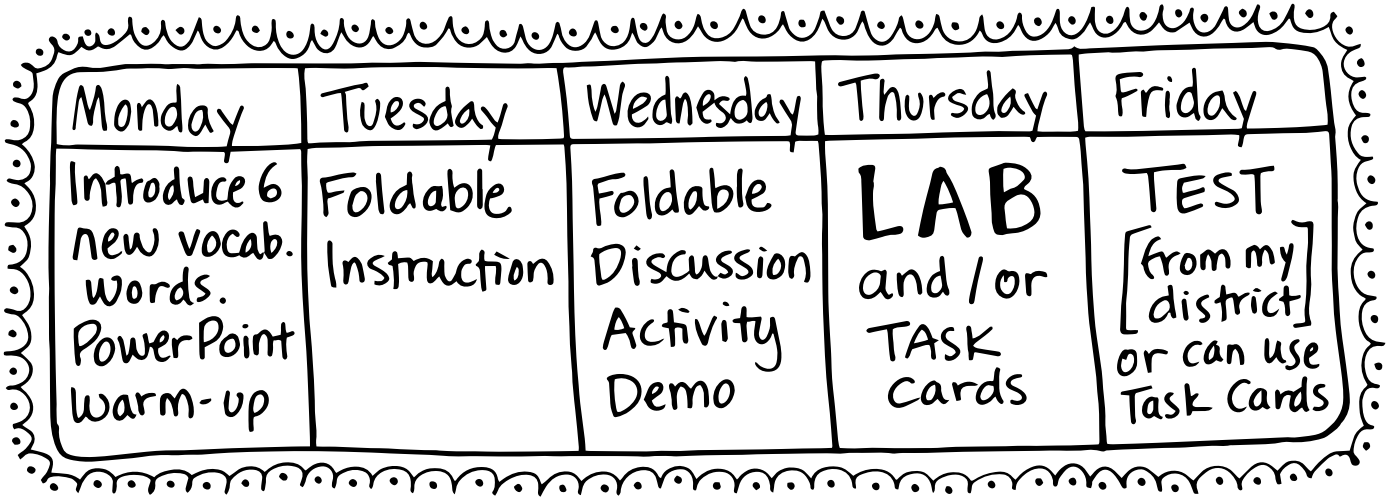
A look at more Science Doodles I offer!

Printing:

Open PDFs with Adobe Reader and print "actual size."

My Typical Week:

I usually teach one science concept per week following this format:



Thanks for purchasing a Science Doodles unit!

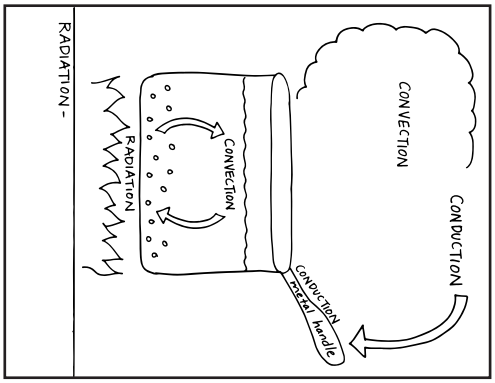
Please leave me feedback and let me know how it worked for your class. Have fun with it!

Melanie Ellsworth
Science doodles ☺

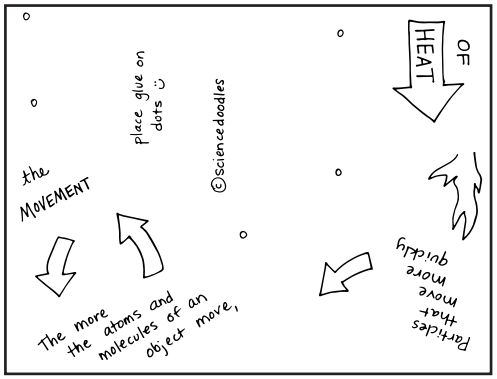
Printing Orientation

(to be taken to printer for correct front to back printing)
It is extremely important to properly print these pages front to back.

Foldable: The Movement of Heat



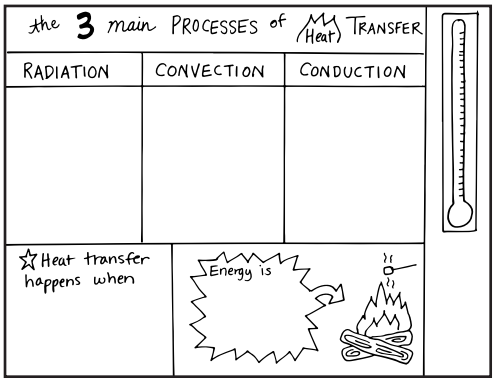
TOP



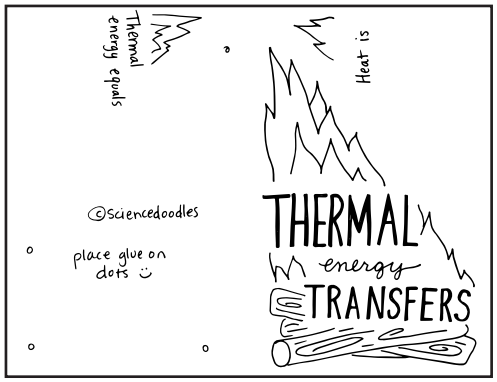
FRONT

BACK

Foldable: Thermal Heat Transfers



TOP



FRONT

BACK

The more atoms and molecules of an object move, the MOVEMENT

place glue on dots ☺

Particles that move more quickly

HEAT OF

the MOVEMENT

COLD sinks

HEAT rises

place glue on dots ☺

The more atoms and molecules of an object move, the higher the temperature of the object.

HEAT

Particles that move more quickly have more heat

OF HEAT

the MOVEMENT

COLD Sinks

The more atoms and molecules of an object move, the higher the temperature of the object.

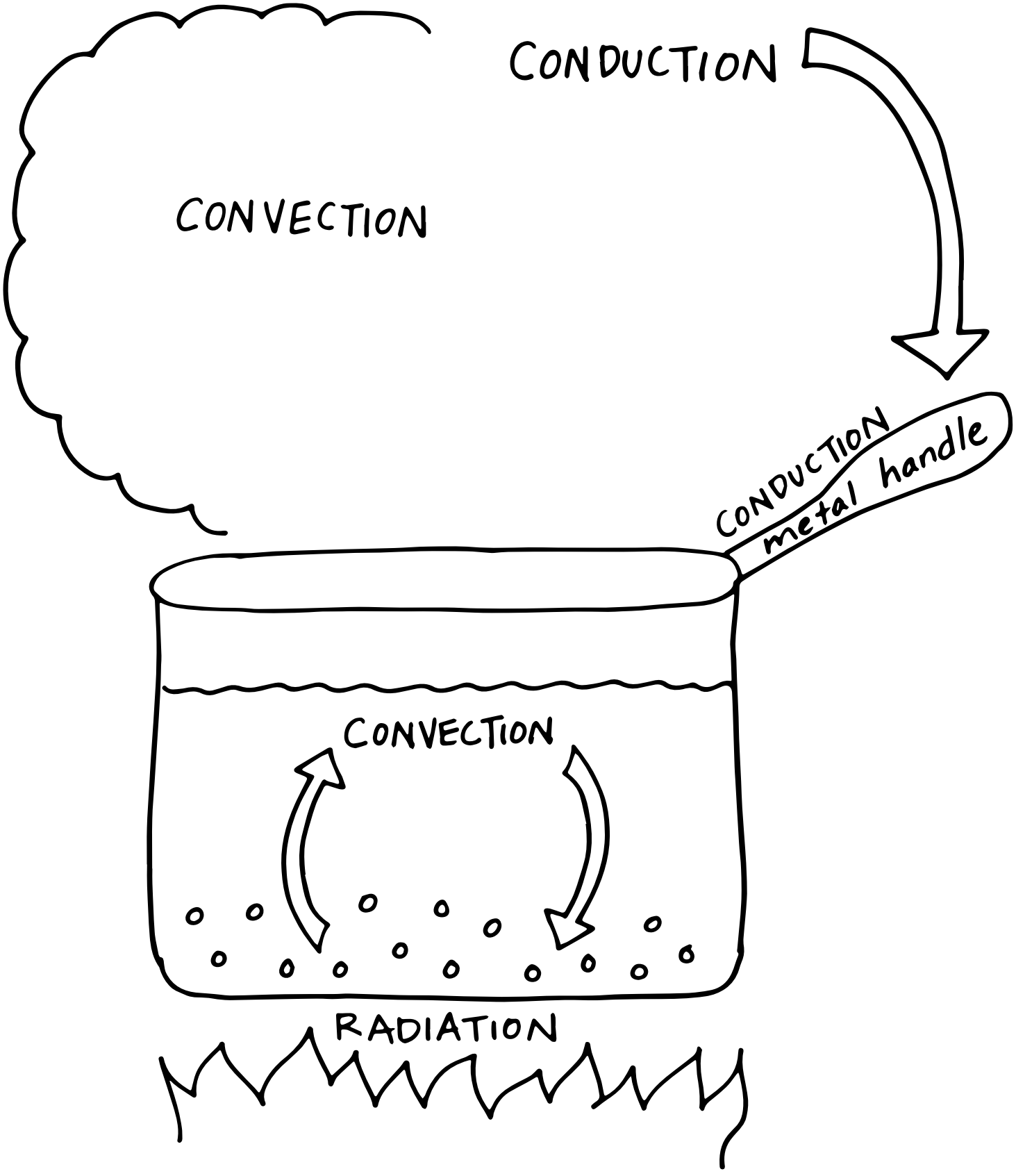
HEAT rises

place glue on dots

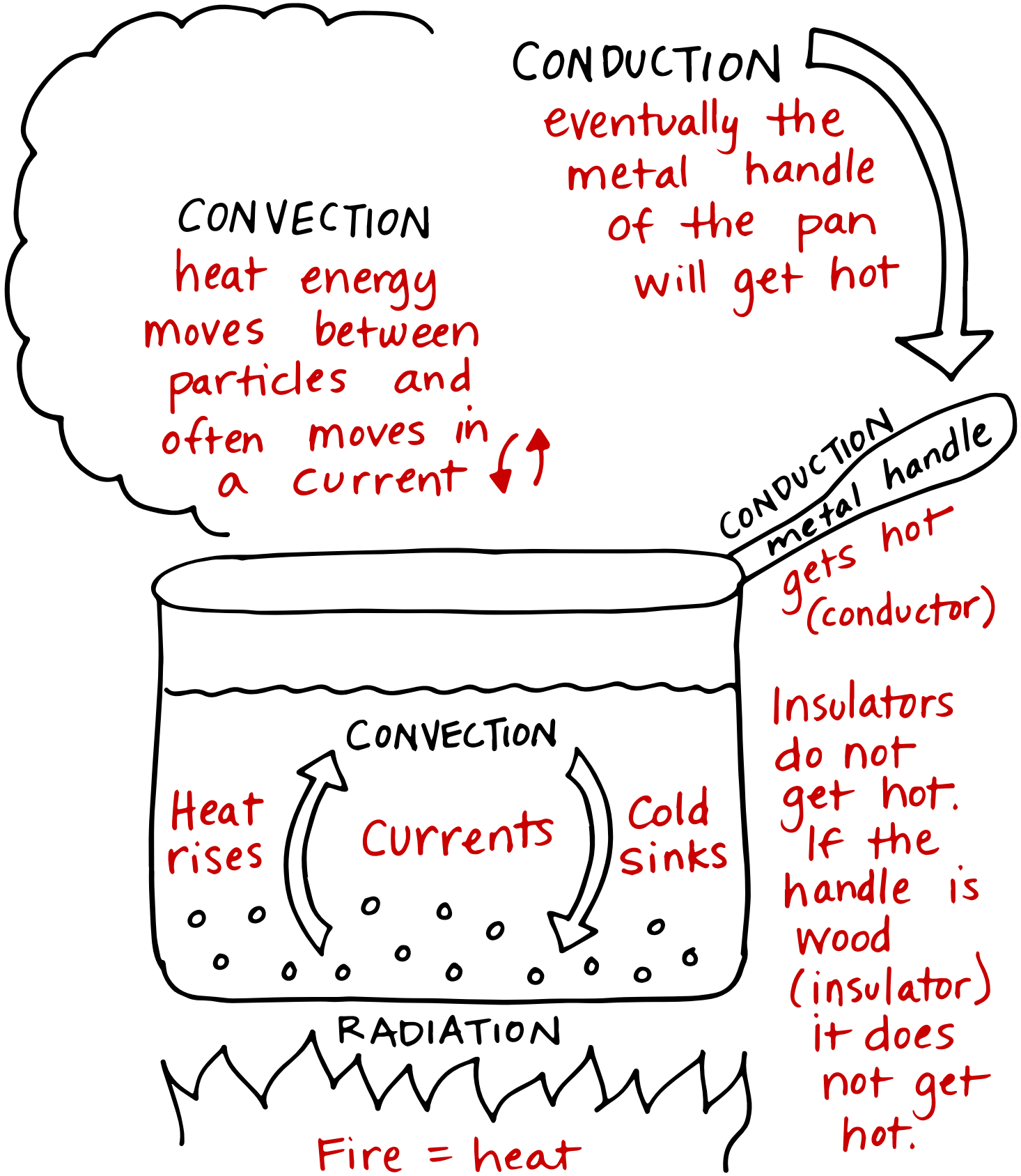
HEAT

Particles that move more quickly have more heat

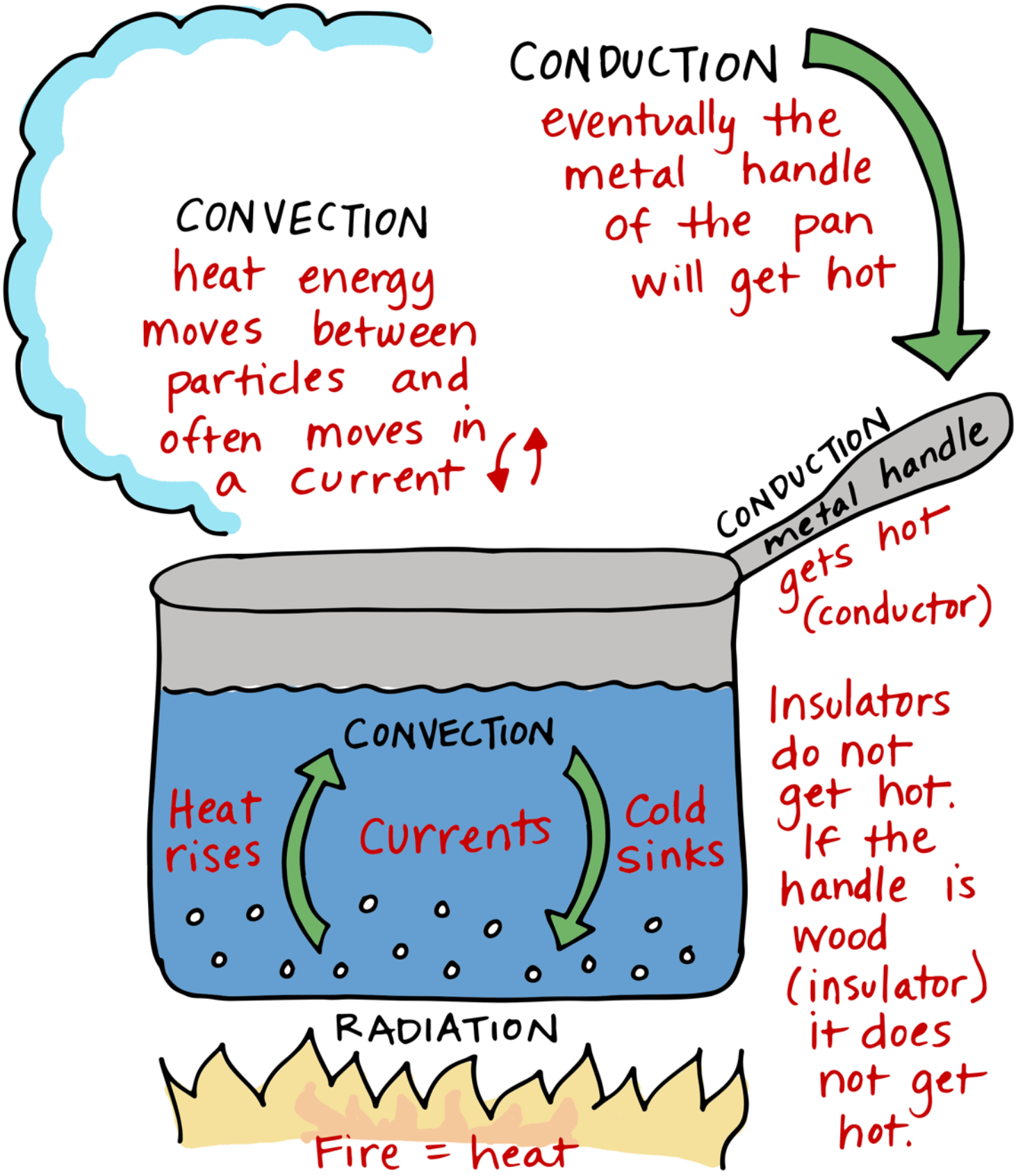
HEAT OF


CONDUCTION
CONVECTION
CONDUCTION
metal handle
CONVECTION
RADIATION

RADIATION -



RADIATION - hot objects emit radiation. Radiation is energy that travels in electromagnetic waves.



RADIATION - hot objects emit radiation. Radiation is energy that travels in electromagnetic waves.

Thermal energy equals

©sciencedoodles

place glue on dots ☺

Heat is

THERMAL energy TRANSFERS

THERMAL energy TRANSFERS

Heat is thermal energy that is being transferred from one place to another

Thermal energy equals the total energy of all moving particles

place glue on dots :)

THERMAL energy TRANSFERS

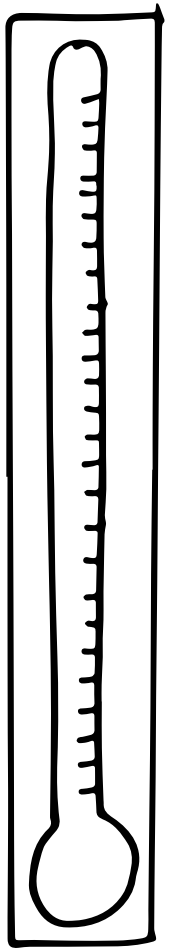
Heat is thermal energy that is being transferred from one place to another

Thermal energy equals the total energy of all moving particles

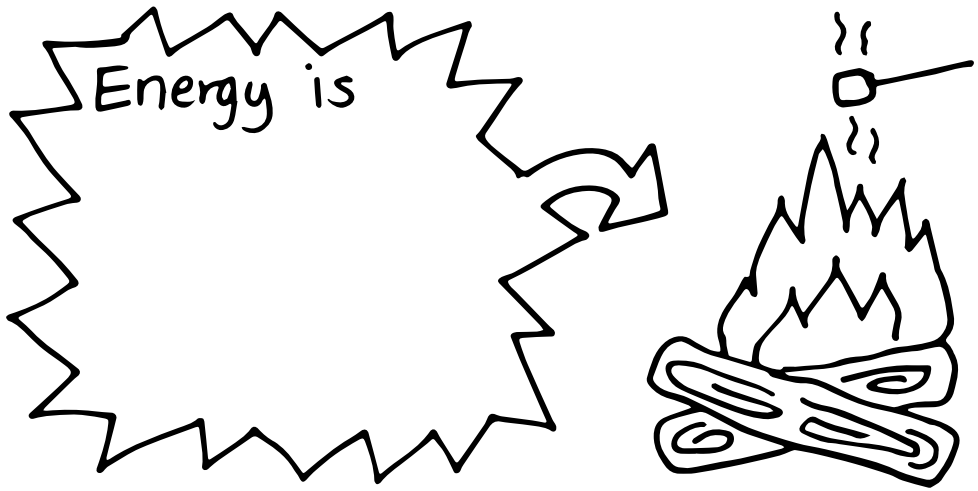
place glue on dots :)

the 3 main PROCESSES of Heat TRANSFER

RADIATION	CONVECTION	CONDUCTION

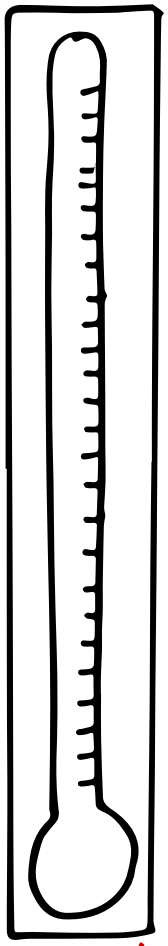


☆ Heat transfer happens when



the 3 main PROCESSES of Heat TRANSFER

RADIATION	CONVECTION	CONDUCTION
the transfer of energy by electromagnetic rays, may occur in empty space, matter need not touch to transfer	the transfer of thermal energy from one place to another by the movement of fluids, occurs on a large scale in Earth's atmosphere, oceans + mantle	the transfer of thermal energy that occurs in solids, liquids, and gases when two substances of different temperatures touch.



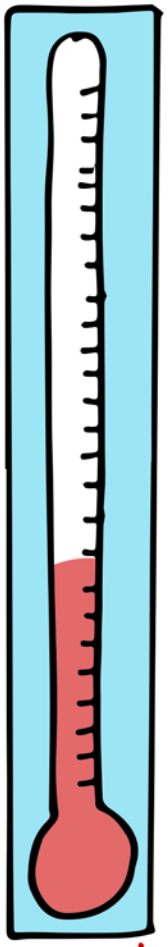
a thermometer measures the average energy of particle motion in an object

☆ Heat transfer happens when some energy moves from one object to another

Energy is never created or destroyed, it just changes form

the 3 main PROCESSES of Heat TRANSFER

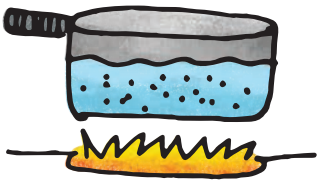
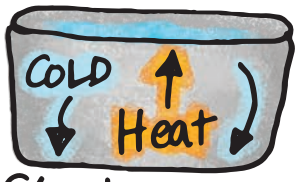
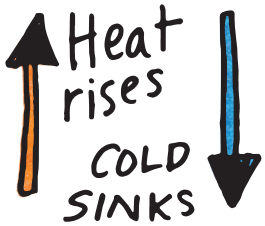
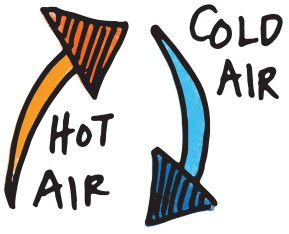
RADIATION	CONVECTION	CONDUCTION
the transfer of energy by electromagnetic rays, may occur in empty space, matter need not touch to transfer	the transfer of thermal energy from one place to another by the movement of fluids, occurs on a large scale in Earth's atmosphere, oceans + mantle	the transfer of thermal energy that occurs in solids, liquids, and gases when two substances of different temperatures touch.



a thermometer measures the average energy of particle motion in an object

☆ Heat transfer happens when some energy moves from one object to another

Energy is never created or destroyed, it just changes form

Draw a Picture	Vocabulary Word	Definition
	thermal energy	the total kinetic (motion) energy of tiny particles that make up matter. faster particles = warmer
	conduction	transfer of thermal energy that occurs in solids, liquids and gases when 2 different substances touch
	convection	transfer of thermal energy from one place to another by the movement of fluids
	radiation	the transfer of energy by electromagnetic rays, may occur in empty space
	heat	energy transferred between two objects of different temperatures, moves from warm to cool
	convection current	a cyclical motion occurs because the density of a fluid is related to its temperature

Cut out on dotted lines and glue in notebook.

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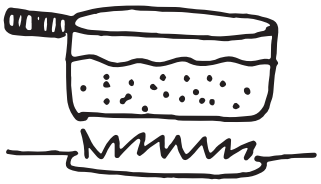
10. Thermal Energy

8 words

(1 of 2)

Draw a Picture	Vocabulary Word	Definition
	thermal energy	the total kinetic (motion) energy of tiny particles that make up matter. faster particles = warmer
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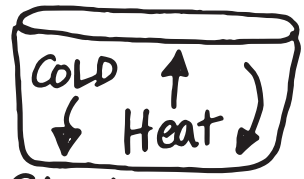	convection	transfer of thermal energy from one place to another by the movement of fluids
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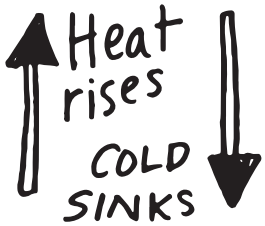
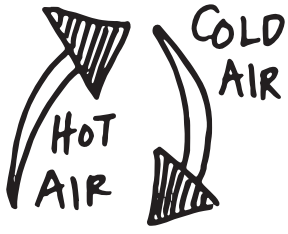
	heat	energy transferred between two objects of different temperatures, moves from warm to cool
	convection current	a cyclical motion occurs because the density of a fluid is related to its temperature

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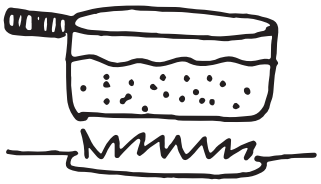
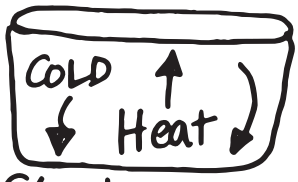
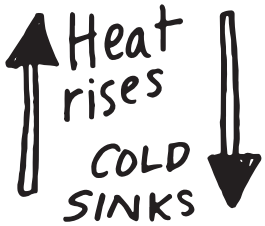
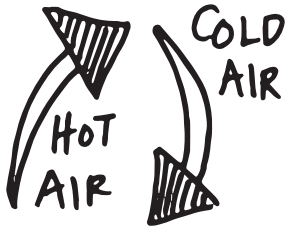
10. Thermal Energy

8 words

(1 of 2)

Draw a Picture	Vocabulary Word	Definition
		
Substances touch 		
 fluids move		
		
		
		

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10. Thermal Energy

8 words
(1 of 2)

Draw a Picture	Vocabulary Word	Definition
	thermal energy	
	conduction	
	convection	
	radiation	
	heat	
	convection current	

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10. Thermal Energy

8 words
(1 of 2)

Draw a Picture	Vocabulary Word	Definition
		the total kinetic (motion) energy of tiny particles that make up matter. faster particles = warmer
		transfer of thermal energy that occurs in solids, liquids and gases when 2 different substances touch
		transfer of thermal energy from one place to another by the movement of fluids
		the transfer of energy by electromagnetic rays, may occur in empty space
		energy transferred between two objects of different temperatures, moves from warm to cool
		a cyclical motion occurs because the density of a fluid is related to its temperature

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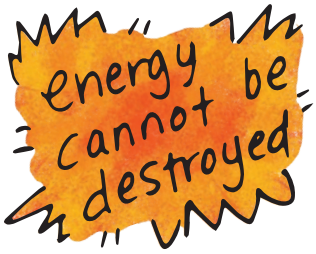
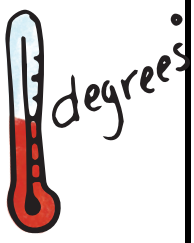
10. Thermal Energy

8 words
(1 of 2)

Draw a Picture	Vocabulary Word	Definition
	Law of Conservation of Energy	energy can neither be created nor destroyed, energy just changes form
	Temperature	average kinetic energy of all the particles in a material, measured by a thermometer

Cut out on dotted lines and glue in notebook.

www.mysciencedoodles.com

10. Thermal Energy 8 words (2 of 2)

Draw a Picture	Vocabulary Word	Definition
energy cannot be destroyed	Law of Conservation of Energy	energy can neither be created nor destroyed, energy just changes form
	Temperature	average kinetic energy of all the particles in a material, measured by a thermometer

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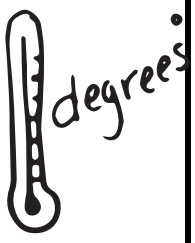
10. Thermal Energy 8 words (2 of 2)

Draw a Picture	Vocabulary Word	Definition
energy = cannot be destroyed		
		

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10. Thermal Energy 8 words (2 of 2)

Draw a Picture	Vocabulary Word	Definition
	Law of Conservation of Energy	
	Temperature	

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10. Thermal Energy 8 words (2 of 2)

Draw a Picture	Vocabulary Word	Definition
		energy can neither be created nor destroyed, energy just changes form
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10. Thermal Energy 8 words (2 of 2)

Draw a Picture	Vocabulary Word	Definition

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#	Name:

TASK CARD ANSWER SHEET

Unit: _____

#missed ☐ Score ☐

1.	9.	17.	25.
2.	10.	18.	26.
3.	11.	19.	27.
4.	12.	20.	28.
5.	13.	21.	29.
6.	14.	22.	30.
7.	15.	23.	31.
8.	16.	24.	32.

#	Name:

TASK CARD ANSWER SHEET

Unit: _____

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1.	9.	17.	25.
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4.	12.	20.	28.
5.	13.	21.	29.
6.	14.	22.	30.
7.	15.	23.	31.
8.	16.	24.	32.

1

The total kinetic energy of tiny particles that make up matter is –

A. solar energy
B. mechanical energy
C. thermal energy

Thermal Energy

2

The transfer of thermal energy that occurs in solids, liquids and gases when two substances of different temperatures touch.

A. radiation
B. conduction
C. convection

Thermal Energy

3

Regarding thermal energy, the faster the tiny particles of matter move, the colder the matter becomes.

A. True
B. False

Thermal Energy

4

The transfer of thermal energy from one place to another by the movement of fluids, which occurs on a large scale in atmospheric gases, oceans and earth's mantle.

A. radiation
B. conduction
C. convection

Thermal Energy

5

The energy transferred between two objects of different temperatures.

A. cold
B. heat
C. radiation

Thermal Energy

6

Energy can neither be created nor destroyed, energy just changes form.

A. sir isaac newton's law
B. the law of conservation of energy
C. the law of motion

Thermal Energy

7

A cyclical motion occurs because the density of a fluid is related to its temperature, causing sinking and rising of the fluid, creating a circular pattem.

A. conduction current
B. electrical current
C. convection curent

Thermal Energy

8

The transfer of energy by electromagnetic rays which may occur in empty space.

A. radiation
B. convection
C. conduction

Thermal Energy

9

One example of conduction is when –

A. the handle of a pot on a fire gets hot
B. warm water rises in a circular motion while being heated
C. heat moves from a fire to the bottom of a pot

Thermal Energy

10

Conduction between two objects can only occur when –

A. one object is more dense
B. both objects are in physical contact with each other
C. one object is made of metal

Thermal Energy

11

The average kinetic energy of all the particles in a material, measured by a thermometer in degrees.

A. temperature
B. mechanical energy
C. potential energy

Thermal Energy

12

Heat transfer happens when some energy moves from one object to another object.

A. True
B. False

Thermal Energy

13

Heat energy is transferred to a beaker of water on a heated hot plate by –

A. radiation
B. convection
C. conduction

Thermal Energy

14

Potatoes that are boiled in water receive thermal energy through –

A. radiation
B. convection
C. conduction

Thermal Energy

15

The transfer of heat energy that moves through empty space is conduction.

A. True
B. False

Thermal Energy

16

One example of radiation is when –

A. the handle of a pot on a fire gets hot
B. warm water rises in a circular motion while being heated.
C. heat moves from a fire to the bottom of a pot

Thermal Energy

17

The faster particles move in matter, the cooler the matter is.

A. True
B. False

Thermal Energy

18

Convection in our atmosphere occurs when solar radiation heats the ground.

A. True
B. False

Thermal Energy

19

The three main processes that transfer thermal energy are –

A. conduction, insulation and radiation
B. radiation, chemical, convection
C. conduction, radiation and convection

Thermal Energy

20

Temperature measures the average energy of motion of an objects particles.

A. True
B. False

Thermal Energy

21

Sunlight warming a room is an example of

A. convection
B. conduction
C. radiation

Thermal Energy

22

Heat flows from warmer objects to cooler objects until both reach the same temperature.

A. True
B. False

Thermal Energy

23

The direction thermal energy moves is from –

A. warm to cool
B. large to small
C. cool to warm

Thermal Energy

24

One example of convection is when –

A. the handle of a pot on a fire gets hot
B. warm water rises in a circular motion while being heated
C. heat moves from a fire to the bottom of a pot

Thermal Energy

25

Beach sand being warmed by the sun is an example of heat transfer through –

A. conduction
B. radiation
C. convection

Thermal Energy

26

While roasting marshmallows the wire handle becomes hot. This is an example of –

A. conduction
B. radiation
C. convection

Thermal Energy

27

A metal spoon getting hot in a pan on the stove is an example of –

A. conduction
B. radiation
C. convection

Thermal Energy

28

Hot air rising and cold air sinking is an example of –

A. radiation
B. convection
C. conduction

Thermal Energy

29

A transfer of heat occurs while ironing a shirt. This represents –

A. conduction
B. convection
C. radiation

Thermal Energy

30

Which tools can be used to measure the rate of heat transfer of thermal energy in liquids?

A. graduated cylinders, funnel
B. beakers, hot plate, thermometers
C. microscope, beakers, hot pad

Thermal Energy

31

The transfer of heat energy from a campfire to a camper warming their hands, is an example of –

A. radiation
B. conduction
C. convection

Thermal Energy

32

Warm and cold water circulating in a pot on the stove is an example of –

A. radiation
B. conduction
C. convection

Thermal Energy

#	Name:

KEY

TASK CARD ANSWER SHEET

Unit: Thermal Energy

#missed ☐ Score ☐

1. C	9. A	17. B	25. B
2. B	10. B	18. A	26. A
3. B	11. A	19. C	27. A
4. C	12. A	20. A	28. B
5. B	13. C	21. C	29. A
6. B	14. B	22. A	30. B
7. C	15. B	23. A	31. A
8. A	16. C	24. B	32. C

SCIENCE Weekly Warm-up

Thermal Energy

#	Name:	
Monday	1 The total kinetic energy of tiny particles that make up matter is – A. solar energy B. mechanical energy C. thermal energy	2 Regarding thermal energy, the faster the tiny particles of matter move, the colder the matter becomes. A. True B. False
Tuesday	3 The transfer of energy by electromagnetic rays which may occur in empty space. A. radiation B. convection C. conduction	4 Conduction between two objects can only occur when – A. one object is more dense B. both objects are in physical contact with each other C. one object is made of metal
Wednesday	5 Heat energy is transferred to a beaker of water on a heated hot plate by – A. radiation B. convection C. conduction	6 Potatoes that are boiled in water receive thermal energy through – A. radiation B. convection C. conduction
Thursday	7 Convection in our atmosphere occurs when solar radiation heats the ground. A. True B. False	8 Heat flows from warmer objects to cooler objects until both reach the same temperature. A. True B. False
Friday	9 Beach sand being warmed by the sun is an example of heat transfer through – A. conduction B. radiation C. convection	10 Hot air rising and cold air sinking is an example of – A. radiation B. convection C. conduction

SCIENCE Weekly Warm-up

Thermal Energy

| Name: KEY

Monday

1 The total kinetic energy of tiny particles that make up matter is –

A. solar energy
B. mechanical energy
C. thermal energy

2 Regarding thermal energy, the faster the tiny particles of matter move, the colder the matter becomes.

A. True
B. False

Tuesday

3 The transfer of energy by electromagnetic rays which may occur in empty space.

A. radiation
B. convection
C. conduction

4 Conduction between two objects can only occur when –

A. one object is more dense
B. both objects are in physical contact with each other
C. one object is made of metal

Wednesday

5 Heat energy is transferred to a beaker of water on a heated hot plate by –

A. radiation
B. convection
C. conduction

6 Potatoes that are boiled in water receive thermal energy through –

A. radiation
B. convection
C. conduction

Thursday

7 Convection in our atmosphere occurs when solar radiation heats the ground.

A. True
B. False

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B. False

Friday

9 Beach sand being warmed by the sun is an example of heat transfer through –

A. conduction
B. radiation
C. convection

10 Hot air rising and cold air sinking is an example of –

A. radiation
B. convection
C. conduction

EVERYTHING I will learn this YEAR!

- ☐ Scientific Method, Safety, Tools
- ☐ Elements and Compounds
- ☐ Formation of a New Substance
- ☐ Metals, Nonmetals, and Metalloids
- ☐ Density
- ☐ Minerals
- ☐ Energy Sources
- ☐ Potential and Kinetic Energy
- ☐ Changes in Force and Motion
- ☐ Inclined Planes and Pulleys
- ☐ Thermal Energy
- ☐ Energy Transformations
- ☐ Layers of the Earth
- ☐ The Rock Cycle
- ☐ Tectonic Plates
- ☐ Celestial Objects
- ☐ Gravity
- ☐ Space Exploration
- ☐ Prokaryotic and Eukaryotic Cells
- ☐ Classification of Organisms
- ☐ Organization& Interactions in an Environment