

WHODUNNIT?

FACT FINDER



Conduction, Convection
& Radiation



Whodunnit?



Name: _____

Six contestants on a reality TV show were stunned to find their lowest scoring colleague was "injured." They must figure out the crime before the bell rings. The question is *Whodunnit?* And how... The Player, Last Known Whereabouts and Method that are left unaccounted for -- is the solution.

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.

Who is the "Criminal"?

(The three boxes left unchecked will reveal the crime. If you cannot figure it out, you may be next.)

The Players

Professor Astro	<input type="checkbox"/>
Mrs. Bio	<input type="checkbox"/>
Mr. Chem	<input type="checkbox"/>
Dr. Earth	<input type="checkbox"/>
Coach Physics	<input type="checkbox"/>
Miss Zoo	<input type="checkbox"/>

The Last Known Whereabouts

Atrium	<input type="checkbox"/>
Gym	<input type="checkbox"/>
Kitchen	<input type="checkbox"/>
Library	<input type="checkbox"/>
Movie Theater	<input type="checkbox"/>
Pool	<input type="checkbox"/>

The Method

Chemical Poisoning	<input type="checkbox"/>
Cougar Attack	<input type="checkbox"/>
Electrocution	<input type="checkbox"/>
Fallen Object	<input type="checkbox"/>
Stubbed Toe	<input type="checkbox"/>
Venomous Bite	<input type="checkbox"/>

???

Clue #1



Conduction, convection, and radiation are all forms of heat _____.

transfer	<i>Dr. Earth was exercising in the gym.</i>
expansion	<i>The victim was not attacked by a cougar.</i>
particles	<i>The injury was not a stubbed toe.</i>
equipment	<i>Coach Physics was reading email in the library.</i>



Clue #2

Which process moves heat through direct contact?

Radiation	<i>Miss Zoo was watching a movie in the theatre.</i>
Conduction	<i>Coach Physics was browsing books in the library.</i>
Convection	<i>The victim did not stub a toe.</i>
Solar power	<i>The victim was not electrocuted.</i>

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Clue #3



Which of the following is an example of conduction?

The sun warms your face.	<i>Dr. Earth was downloading apps to an iPad in the library.</i>
Hot air rises from a bonfire.	<i>The victim was not attacked by a cougar.</i>
Soup heats in the microwave.	<i>Coach Physics was sunbathing by the pool.</i>
The hot sand burns your feet.	<i>The victim was not electrocuted.</i>



Clue #4

Which method of heat transfer can occur in empty space?

Convection	<i>The victim was not electrocuted.</i>
Conduction	<i>Mr. Chem was drinking coffee in the kitchen.</i>
Vaporization	<i>Coach Physics was shelving books in the library.</i>
Radiation	<i>The victim did not stub a toe.</i>

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Clue #5

W E O D U N N I I ?



Refer to the image. Which method of heat transfer is occurring within the kettle?

Conduction	<i>The victim did not get a toe stubbed.</i>
Radiation	<i>Mr. Chem was practicing a new swimming stroke in the pool.</i>
Convection	<i>Miss Zoo was in the atrium reading Harry Potter.</i>
Combustion	<i>The injury did not involve a cougar.</i>

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Clue #6



Radiation involves one object emitting heat in the form of _____ waves and another object absorbing this energy.

surface	<i>The victim was not attacked by a cougar.</i>
kinetic	<i>The injury did not involve venom.</i>
circuit	<i>Dr. Earth was watching a documentary in the movie theater.</i>
electromagnetic	<i>Mrs. Bio was swimming in the pool.</i>



Clue #7

Which state(s) of matter can transfer heat through convection?

Solids, liquids, and gases	<i>The criminal did not use a fallen object.</i>
Gases only	<i>Mr. Chem was shouting in the library.</i>
Liquids only	<i>Mrs. Bio was doing crossword puzzles in the kitchen.</i>
Liquids and gases	<i>The victim did not have a venomous bite.</i>

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Clue #8

W E O D U N N I I ?



Which of the following statements corrects the error shown in the image?

The image should only show heat flowing from the hands to the ice.	<i>The victim was not attacked by a cougar.</i>
The image should only show heat flowing from the ice to the hands.	<i>The criminal did not use venom.</i>
The image should show heat traveling back and forth between the two objects.	<i>Mrs. Bio was watching a trailer in the movie theater.</i>
The image correctly shows how heat flows between the ice and the hands.	<i>Dr. Earth was swimming in the pool.</i>

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Clue #9

W E O D U N N I I ?

When does heat stop flowing between two objects?

When one object is much cooler than the other.	<i>Mr. Chem was eating a snack in the kitchen.</i>
When one object is much warmer than the other.	<i>Professor Astro was watching a movie in the theater.</i>
When both objects are the same temperature.	<i>The victim was not chemically poisoned.</i>
When the warmer object melts the cooler object.	<i>A fallen object was not the method used.</i>

W E O D U N N I I ?

Clue #10

What happens to particles in a convection current as they heat?

They rise.	<i>Mr. Chem was watching Ghostbusters in the movie theater.</i>
They sink to replace cooler particles.	<i>A fallen object was not the cause of injury.</i>
Their density increases.	<i>Professor Astro was making a salad in the kitchen.</i>
They move more slowly and move closer together.	<i>The victim was not chemically poisoned.</i>

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