Name:

_____

Geography H/W booklet – Weather Hazards

Section 1 - Atmospheric Circulation

Test yourself on these spellings, remember to look, cover, write and check.

Fill in this paragraph:

He earth has a general atmospheric circulation pattern. The equator is an area of _____ The poles are areas of _____At the equator _____ because it is _____and moves towards the poles. At about 30 degrees North and South of the equator the air _____ and flows back to the tropics this is the _____ cell. This pattern repeats 2 more times and these are the _____ cell and the _____ cell. This creates the conditions for tropical storms to form.

warm air rises | hot | Polar | high pressure | low pressure | Ferrell | air descends and cools | Hadley

Draw your own diagram of atmospheric circulation in the box on the next page. Make sure you have the labels from the word fill paragraph.

Put the formation of a tropical storm in order.

Cold air sinks in the eye, therefore there **is no cloud**, so it **is drier** and much **calmer**	
The **tropical storm travels across the ocean** in the prevailing wind.	
The Coriolis effect causes the air to spin upwards around a calm central eye of the storm.	
As the air rises, it cools and condenses to form large, towering cumulonimbus **clouds**, which generate very **heavy rainfall**. **The heat given off when the air cools powers the tropical storm**.	
When the **tropical storm meets land** it is no longer fuelled by the source of moisture and heat from the ocean so **it loses power and weakens**.	
The rising air draws up more air and large volumes of moisture from the ocean, causing strong winds.	
Air is heated above the surface of warm tropical oceans. The warm air rises very rapidly under low pressure conditions	

Look and Cover 1st attempt 2nd attempt 3rd attempt

Atmospheric _____ _____ _____

Hadley _____ _____ _____

Ferrell _____ _____ _____

Condenses _____ _____

_____

Circulation _____ _____

_____

Section 2 – Tropical Storms

Circle the correct answer:

Can tropical storms form on the equator? YES/NO

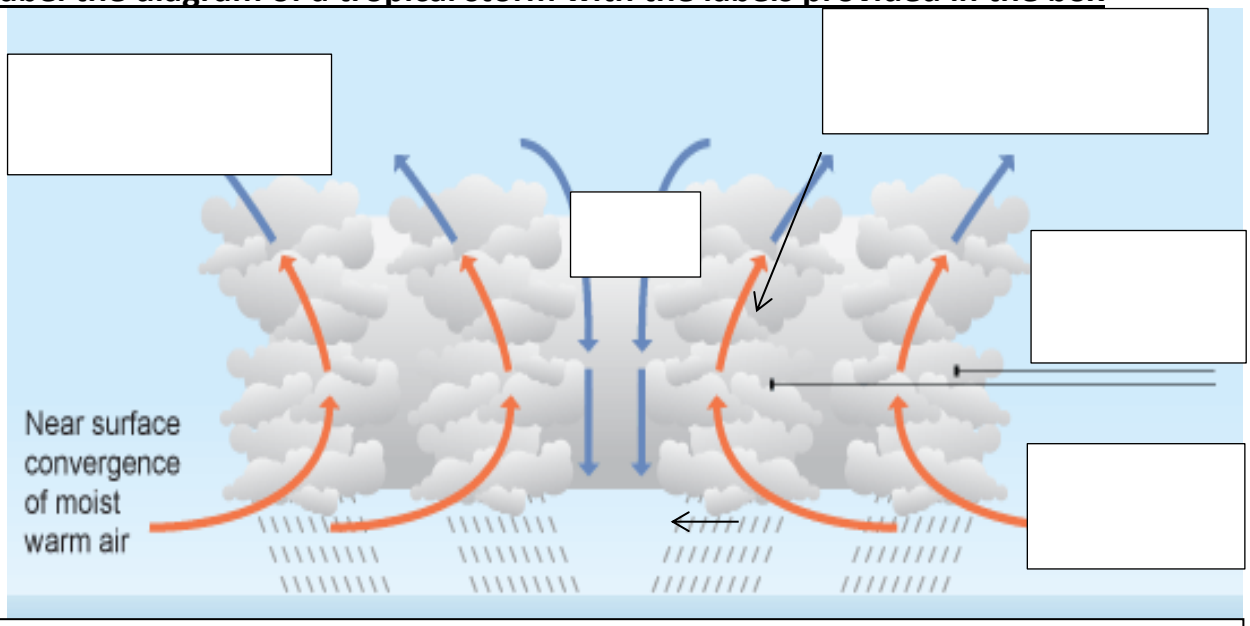
What temperature does the sea need to be for a tropical storm to form? 23 degrees/ 37 degrees / 27 degrees

How deep does the sea need to be for a tropical storm to form? 5-30m/ 60-70m / 100-150m

Match up these key terms to their definition.

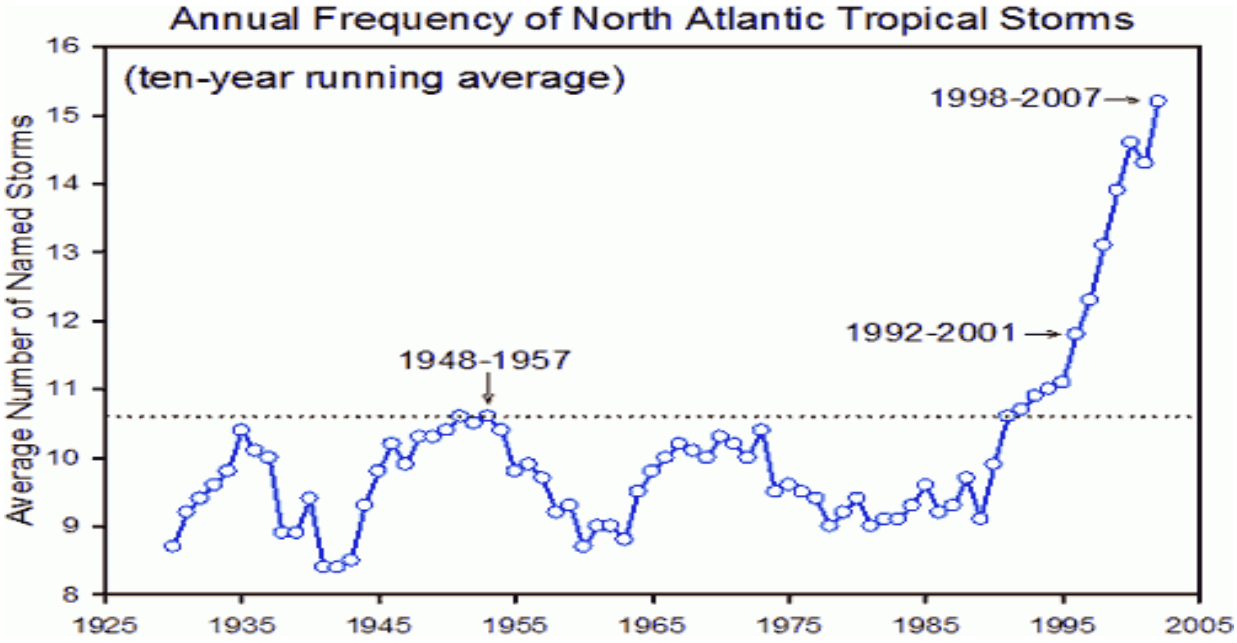
The rotation of the Earth. Causes winds to shift towards the right or left.	**Hurricanes**
the way something is spread out or arranged over a geographic area, e.g on a map	**Global Atmospheric Circulation**
a difference in wind speed and direction in the atmosphere, needs to be low for TS formation	**Typhoon**
Name of a tropical storm in the Atlantic Ocean	**Cyclones**
Name of a tropical storm in the Pacific Ocean	**Wind shear**
The worldwide system of winds, which transports heat from tropical to polar latitude	**Coriolis effect**
Name of a tropical storm in the Indian Ocean	**Distribution**

Label the diagram of a tropical storm with the labels provided in the box



Spiral band of thunderstorms / eye / diverging airflow in upper atmosphere / warm air rising / heavy rainfall

Describe the trend of the number of hurricanes in the North Atlantic Ocean using the graph below:



Section 3 – Prediction, Preparation and Protection

Colour/Code each of these a Prediction, Preparation or Protection technique:

using satellites

preparing disaster supply kits

specially equipped aircraft

reinforce garage doors

installing hurricane straps on houses

tie down windborne objects

using supercomputers to estimate where the tropical storm will hit

installing an emergency shelter

remove trees close to buildings

knowing where the evacuation shelters are

Put 3 of the above techniques into the HIC and 3 in the LIC boxes below – what are they capable of doing? Think about how much money it will cost or the technology involved

HIC:	LIC:

Fill in the paragraph below about HIC and LIC PPP for a tropical storm:

Preparation and prediction techniques can be very different in HICs and LICs.

HICs have the _____ and _____ to predict and monitor the occurrence of storms, eg using _____ and specially equipped _____. They can also _____ for tropical storms as they are also equipped to train the _____ appropriately and to _____ people about necessary precautions.

Storm _____ can be issued to enable the population to _____ or prepare themselves for the storm. People can prepare by storing food and water or boarding up their windows.

LICS are often less prepared. They may rely on _____ from HICs for the rescue and recovery process, as was the case with _____ in the Philippines.

EMERGENCY SERVICES TYPHOON HAIYAN TECHNOLOGY RESOURCES AID SATELITES WARNINGS AIRCRAFT EDUCATE EVACUATE PREPARE

Draw an annotated picture of a house in the box below with all the ways you can protect/prepare yourself from hazards of a tropical storm (use the previous sorting activity for ideas)

Section 4 – Typhoon Haiyan

Use the figure above to *describe and explain* the track and intensity of TyphoonHaiyan:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Test yourself on these spellings, remember to look, cover, write and check.

Look and Cover	1st attempt	2nd attempt	3rd attempt
Phillipines			
Haiyan			
Environmental			
Economic			
Social			
Typhoon			

Label all the Social/ Economic and Environmental Impacts that you can see in these 2 photos:

Section 5 – How does Global Warming affect Tropical Storms?

N B N L L D D K M Y O S N Q W
J O M M G V P E T H H E N K S
X D I O W B H I P H G G L D V
J B P T T Z S M V D B R Y S S
S B K T U N M G K G T U Q F J
D C X G E B U P K V B S W O D
J Y R T P K I Q L A I M P S G
U X N X O I Z R O A B R T Y G
L I R G I N Q S T A K O P H E
F R E Q U E N C Y S R T T E O
L V C S M P K D N W I S Q T A
J G S Z G R G A O R V D Y C P
G N I M R A W L A B O L G T E
L L U W L Q A V O L H C X M L
K E I A F B U L V V Y Z S C S

Find and Circle these words in the word search:

DISTRIBUTION

FREQUENCY

GLOBALWARMING

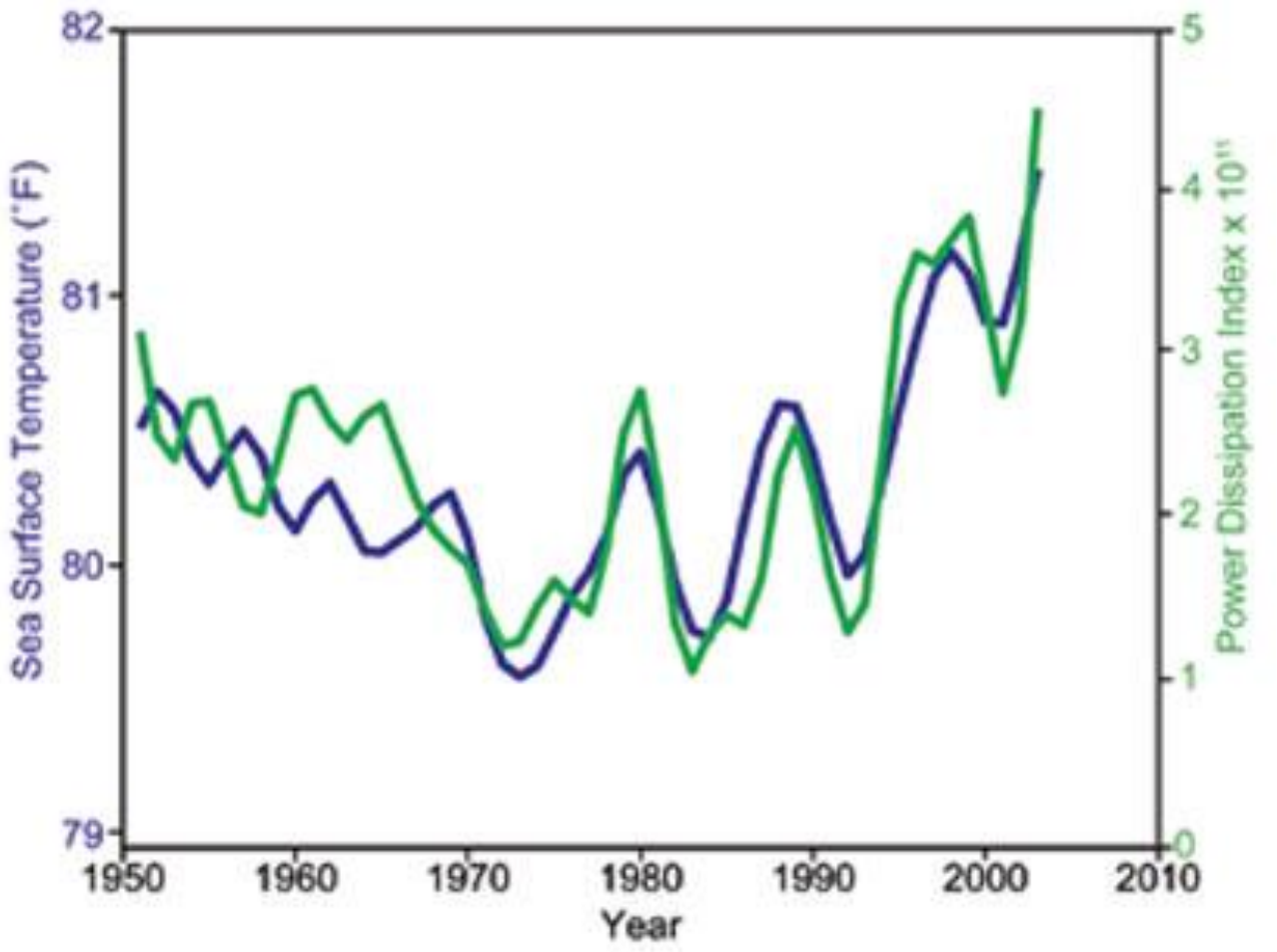
INTENSITY

STORMSURGES

Match these key terms to their definition:

When a storm creates strong waves and a rise in sea level,	Global Warming
The rate (how often) of which something happens over a	Storm Surge
The measurable amount of force e.g Saffir Simpson Scale	Frequency
a gradual increase in the overall temperature of the earth's atmosphere due to the greenhouse effect caused by	Intensity

Use the figure below to complete the sentences on the next page:



There is a relationship between sea surface temperature and power of tropical storms. When sea surface temperature is high, the power (intensity) of tropical storms is _____. Over the past 60 years there has been an overall _____ in the intensity of tropical storms.

Circle True or False for each statement:

Storm surges will become higher due to thermal expansion of the sea **T/F**

Tropical storms are expected to become less intense **T/F**

The overall frequency is expected to increase **T/F**

The frequency of more severe tropical storms will increase **T/F**

Predicting the impact of tropical storms is difficult as scientists do not have very accurate data yet. **T/F**

The regions where tropical storms are experienced are not expected to change significantly **T/F**

Section 6 – UK Weather Hazards

Statement	Cause? Impact? Response
Using boats to go about their lives	
Somerset Council have increased the capacity of the river channel	
The wettest January since records began. Bad weather from across the Atlantic Ocean brought a period of wet weather lasting several weeks	
Over 600 houses flooded	
Villages cut off from each other	
River banks are being raised and strengthened and more pumping stations being built	
Floodwaters were contaminated with sewage	
Lots of agricultural land was underwater for weeks	
Road levels are being raised to maintain communication and business during future flood events	
The cost of the flood was more than £10 million	
High tides and storm surges swept water up the river and over the banks from the sea	
Vulnerable areas will have flood defences built	
Many people had power supplies cut off	

Label each statement a cause, impact or response of the Somerset Level Floods in 2014:

Sort the Impacts in your table into Social, Economic and Environmental using 3 different colours.

Where the flooding happened. Using this map why do you think this area would be prone to flooding? (Hint, what are the blue lines? What are the brown areas?

Fill in this paragraph using the words below:

The UK is at a meeting point of several different types of weather from different directions. From the North, _____ air can bring _____ and _____. A severe winter came come from the East. _____ from the Atlantic bring in _____ and _____. From Europe in the _____ hot and sunny weather can lead to _____ and _____.

very cold conditions/heavy rain/south/ strong winds/ heat waves/heavy snow/droughts/storms/ Arctic