ENZYMES

Printable Worksheets

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ENZYMES

1. Fill in the missing words:

Enzymes are chemicals that act as biological _____, meaning that they speed up _____ _____ without being used up themselves. Enzymes are extremely important because without them, our various internal reactions would occur too _____ to keep us alive and healthy.

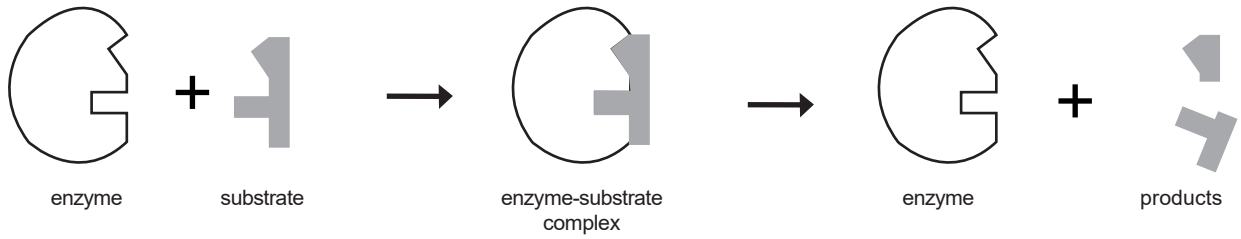
Enzymes are _____, consisting of one or more polypeptide chains. They work by reducing the amount of _____ _____ required to 'kick-start' a reaction. This makes the reaction go _____.

Enzymes are highly specific, that is, each one has a particular type of substance that it acts on, referred to as its _____. An enzyme binds to its _____ at a specialized region known as the _____ _____.

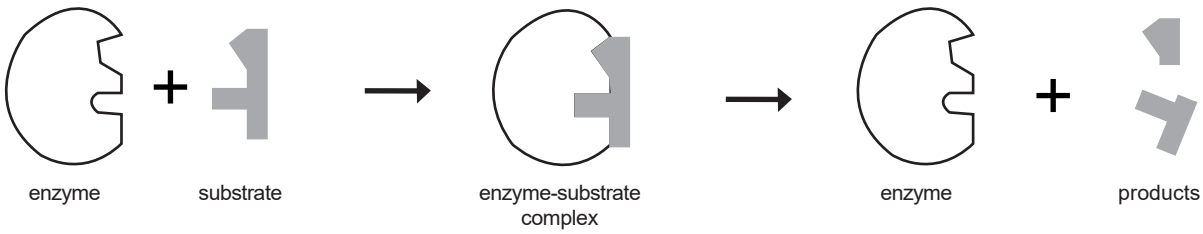
Enzymes tend to have _____ conditions under which they work best, such as particular temperatures or pH. They can be _____ at high temperatures, meaning that the shape of the _____ _____ has been permanently changed and can no longer bind to the _____. They can also be _____, or their activity may be _____, by cold temperatures or changes in pH.

2. Scientists have put forward two different models to explain how enzymes bind to their substrates. These are shown below:

Model 1: _____ body cell



Model 2: _____



(a) On the diagrams, name the two models.

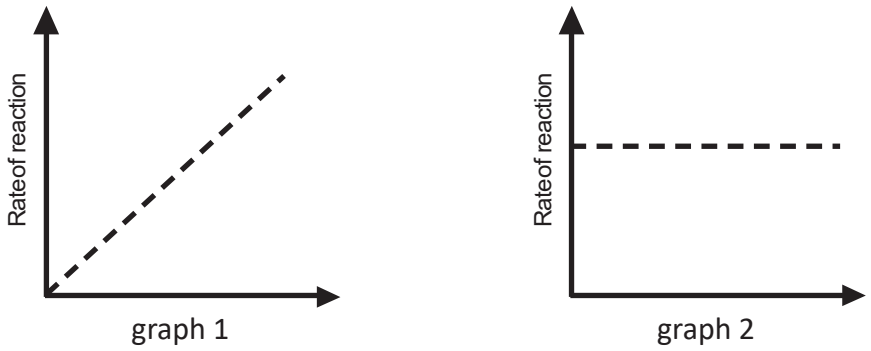
(b) In your own words, explain the differences between these two models.

_____

_____

_____

3. Look carefully at the following graphs showing data from a reaction involving an enzyme and its substrate:



(a) Which graph shows what happens to the reaction rate when you increase (i) the substrate concentration (ii) the enzyme concentration?

_____

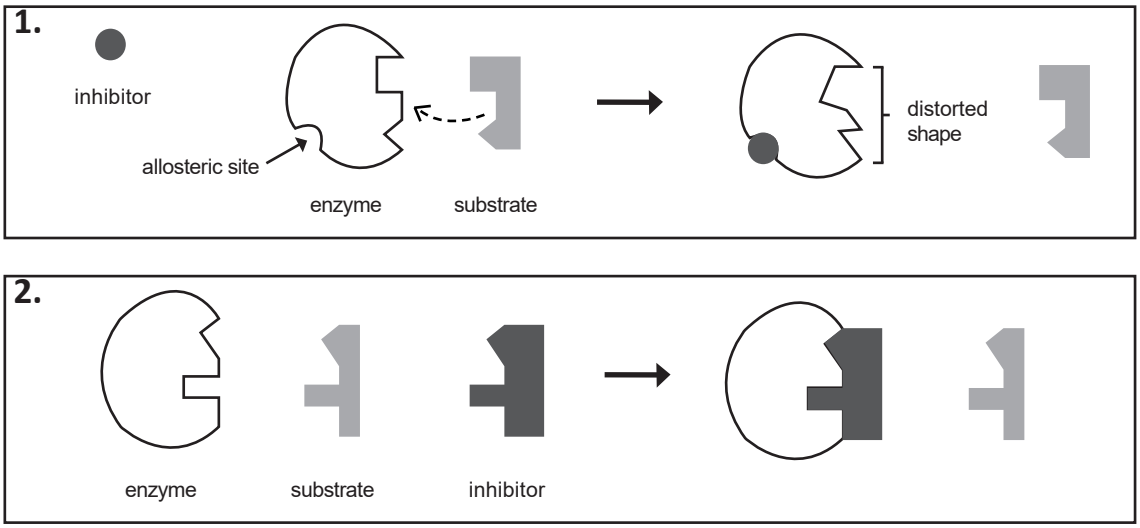
(b) Explain your answer to 3 (a).

_____

_____

_____

4. Certain chemical substances - including many poisons - can inhibit or interfere with enzyme activity. Two types of enzyme inhibition are *competitive* inhibition and *non-competitive* inhibition, both shown below:



Which diagram shows (i) competitive inhibition (ii) non-competitive inhibition? Explain.

_____

_____

_____

_____

ENZYMES WORD FIND

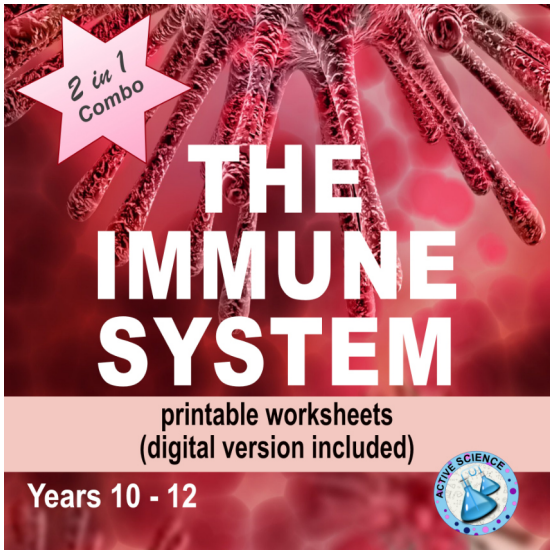
Work out each of the 20 clues below, then find and highlight those words in the following word find.

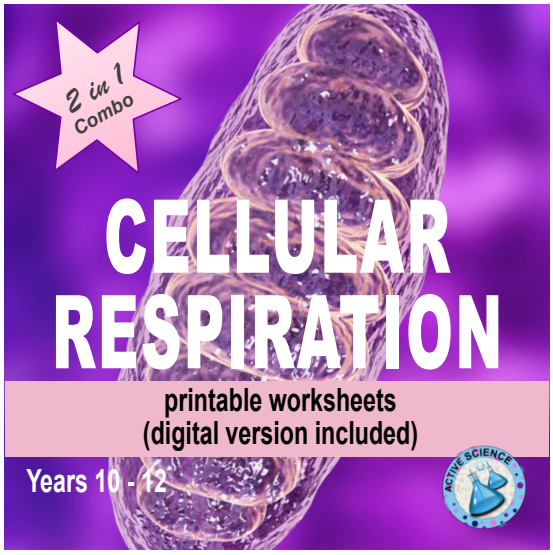
I	G	N	G	X	E	L	P	M	O	C	O	R	Q
N	L	E	N	Z	Y	M	E	G	B	I	P	O	S
D	A	N	Y	I	S	U	B	S	T	R	A	T	E
U	M	L	O	C	K	A	N	D	K	E	Y	C	M
C	I	N	L	I	E	C	Z	O	I	T	A	A	Y
E	T	A	V	I	T	C	A	N	I	S	W	F	Z
D	P	D	M	H	I	A	M	T	Q	O	U	O	N
F	O	P	S	D	S	D	V	F	A	L	T	C	E
I	R	R	E	V	E	R	S	I	B	L	E	K	O
T	N	T	J	B	V	A	X	C	T	A	Y	L	C
I	N	H	I	B	I	T	I	O	N	C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

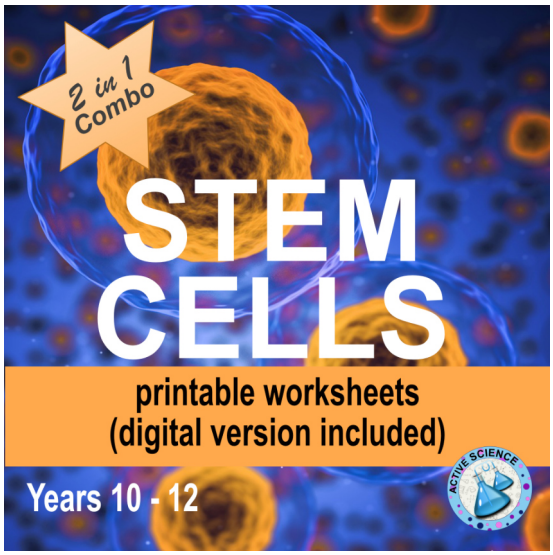
Clues:

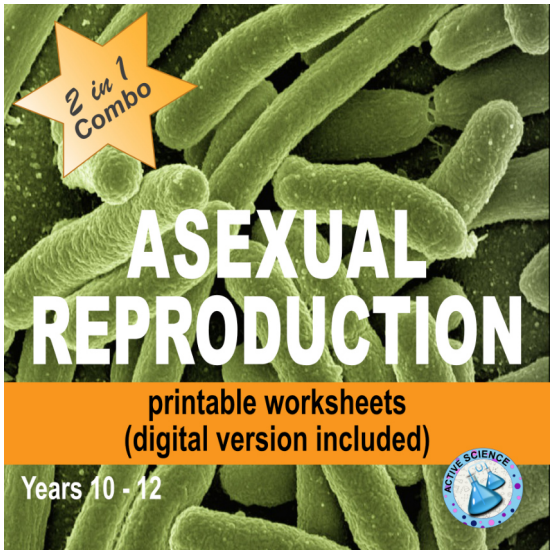
1. Enzymes can _____ at high temperatures.
2. You can't go back with this type of inhibition.
3. Non-protein component of an enzyme that is essential for its proper functioning.
4. The energy needed to kick-start a chemical reaction.
5. Speeds up chemical reactions without itself being used up.
6. Enzyme model where you have a perfect fit.
7. Area where an enzyme binds to its substrate.
8. Site on an enzyme where a non-competitive inhibitor binds.
9. Describes groups of organic cofactors that bind tightly to enzymes.
10. Can be competitive or non-competitive.
11. Substance that an enzyme acts on.
12. Enzyme model where there is an imperfect fit.
13. Organic cofactors that bind loosely to enzymes.
14. The binding of enzyme and substrate form the enzyme-substrate _____.
15. What you get at the end of a chemical reaction.
16. Cold temperatures can _____ enzymes.
17. A biological catalyst.
18. Type of inhibition that can be undone.
19. Enzymes work best under these conditions.
20. Important coenzyme involved in photosynthesis.

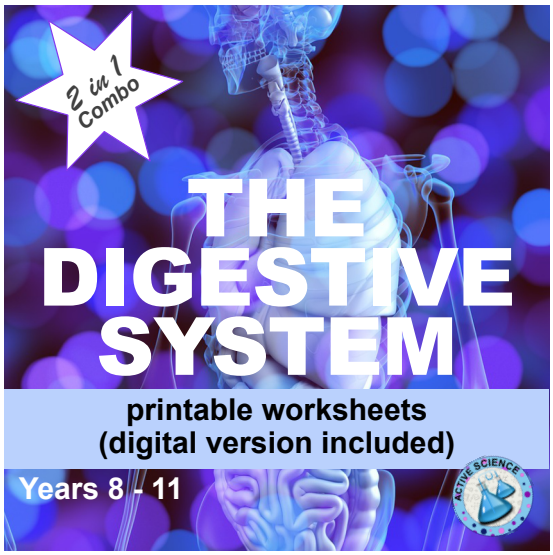
Other available resources:

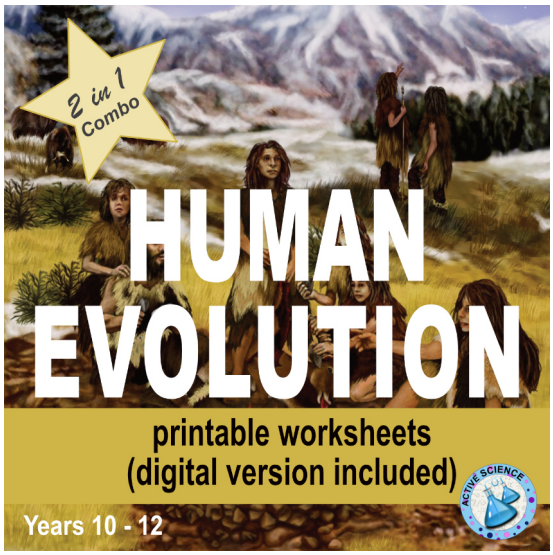












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