



**NORTH DURHAM
ACADEMY**

Year 8 Resource Booklet





WHY ARE PEOPLE MORE LIKELY TO GET SICK WHEN IT IS COLD?

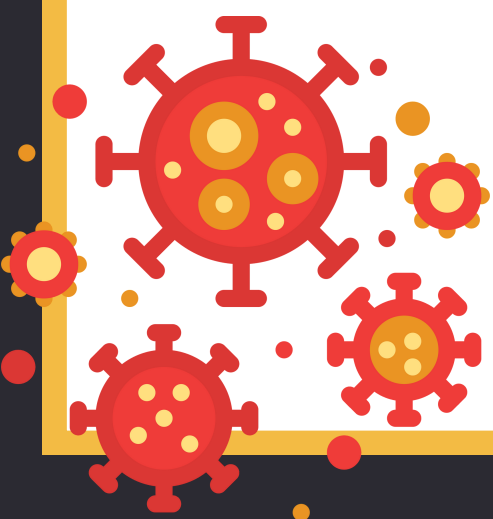
Have you ever wondered why colds and other illnesses seem to spread like wildfire when the temperature drops? Well, this journal is here to uncover the hidden mysteries behind this phenomenon.

In this special edition, scientists have investigated how our amazing noses protect us from germs and how they fight off viruses. They've discovered something incredible: our noses have their own defense system called "extracellular vesicles" that help keep us healthy. But here's the twist: when it's cold, these defense systems become weaker, making us more susceptible to getting sick.

In this article you'll learn about the clever tricks viruses use to infect our bodies and how our noses fight back.

Read the article and answer the following questions:

1. How do the extracellular vesicles prevent viruses from infecting nasal cells?
2. Why did we measure the temperature inside the volunteers' noses?
3. How do colder temperatures affect the nose's response to viruses?
4. Select one of the healthy habits listed in the article and identify a way to encourage this habit at home or at school.
5. Brainstorm a list of additional good health habits that will help prevent viral infections, such as common colds and the flu.





HOW DO GRASSFROGS BECOME TRANSPARENT?

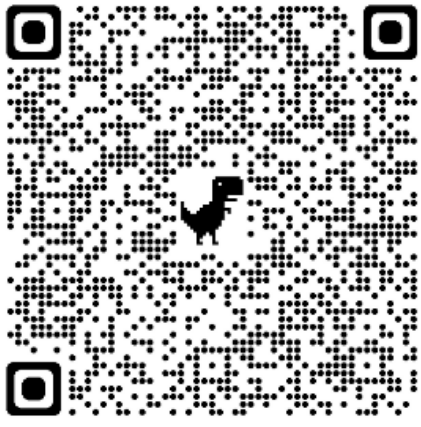


Glassfrogs earned their name not because they are fragile, but because they are see-through! These tropical frogs have transparent skin and muscles. When sleeping on green leaves, their bodies are almost impossible to see. This form of camouflage is rare. Most animals have colorful red blood cells that would be visible under transparent skin and give them away to predators. The scientists who conducted this study used a special scanner to figure out how glassfrogs overcome this challenge. They discovered that these frogs are more transparent when they sleep than when they are active. They do this by hiding most of their red blood cells in their livers during sleep! This makes them nearly transparent to predators. Could the findings from this study help doctors treat medical conditions in humans?

Read the article by scanning the QR code.
Answer the following questions:



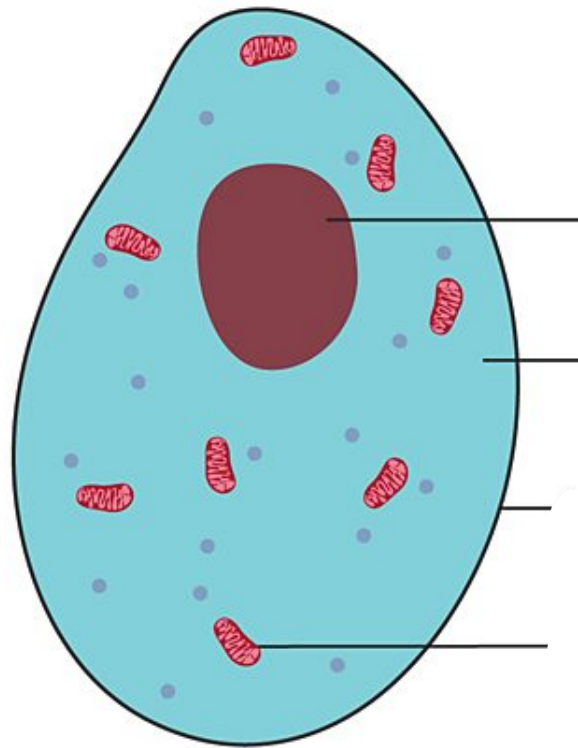
1. Glassfrogs have transparent skin and muscles. Why is this helpful to them?
2. How do glassfrogs' livers change when they sleep?
3. How could research on glassfrogs be applied to human health?
4. Can you think of other animals that use camouflage? Provide an example and how it helps the animal.
5. Transparency is rare in animals that live on land but more common in animals that live in the ocean. Research some transparent ocean animals and how they accomplish transparency.



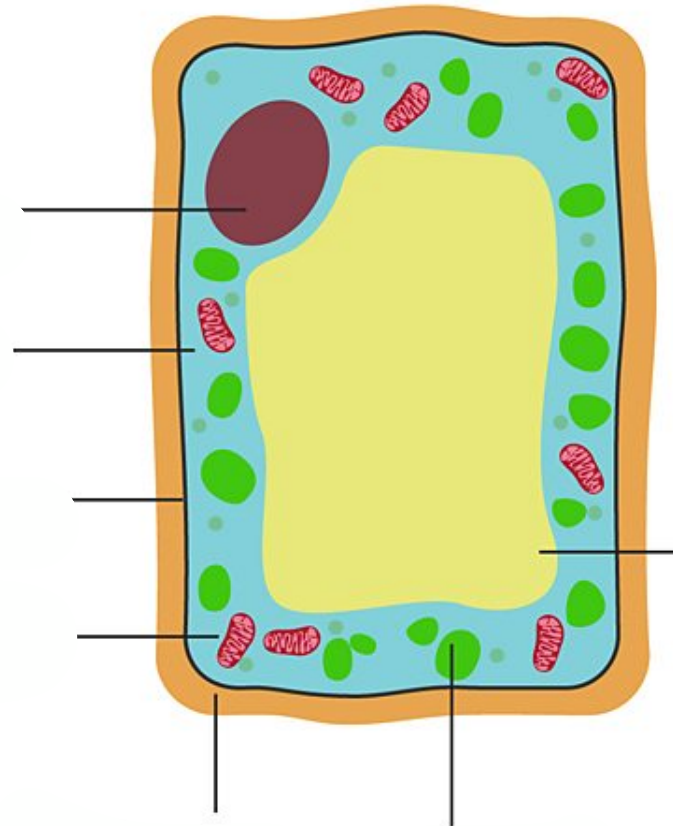
CELLS

Use the QR code to label the diagram of the animal and plant cell. Write down the function of each organelle in the table below.

Animal cell



Plant cell



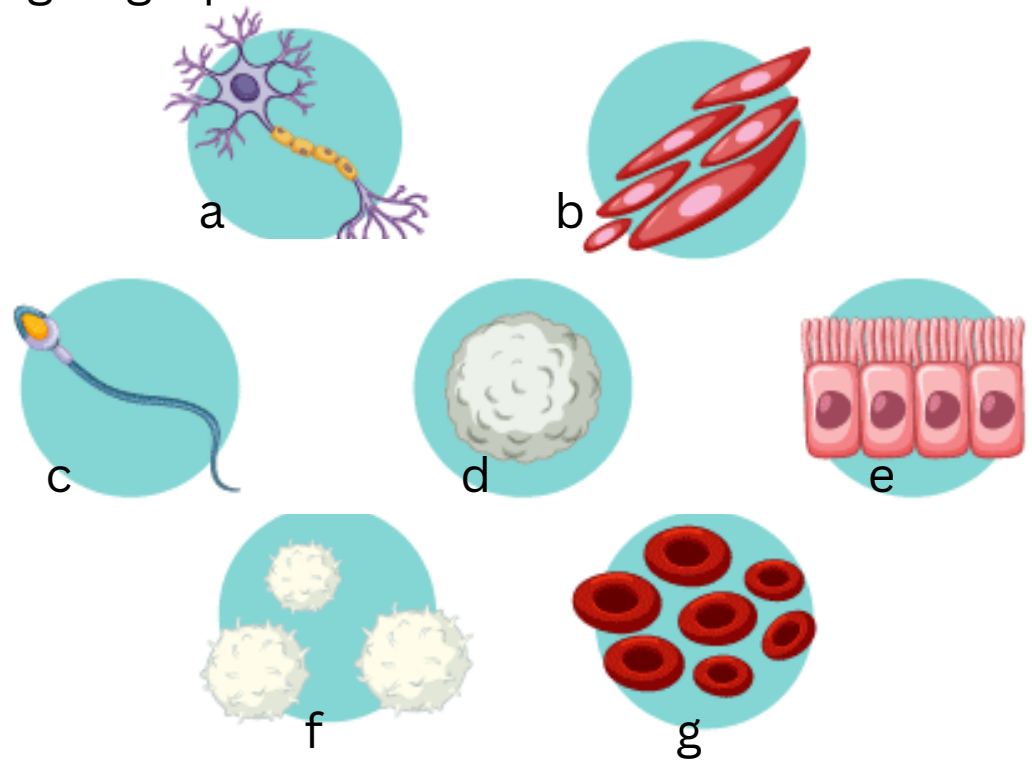
Organelle	Function

SPECIALISED CELLS

- A specialised cell is a cell that has a particular structure and composition of subcellular structures (organelles)
- Specialised cells have specific adaptations that allow them to carry out their function.
- Cells become specialised by undergoing a process known as differentiation

Can you identify these specialised animal cells? Use the box underneath to help you.

Research about each type of cell to fill out the table.



Cell	Specialised cell	Function	Adaptations
g	Red blood cell		
	Neuron (nerve cell)		
	Muscle cell		
	Ciliated epithelial cell		
	White blood cell		
	Sperm cell		
	Egg cell		

Maths Activity Mats Pack 1: Silver

1

a Put the following numbers in order from smallest to largest:

-0.7, 0.65, -0.68, -0.625, 0.8

$\frac{10}{12}$, $\frac{5}{8}$, $\frac{2}{3}$, $\frac{17}{24}$

c Write as a decimal:

$\frac{2}{5}$

0.5%

d

Evaluate:

$$13 + 3 \times 7 + 12 \div 2 =$$

$$8 \times (2 + 3) + 5^2 =$$

e I think of a number, multiply it by 2, square root the result then subtract 4.

The result is 4. What number did I first think of?

b

It takes 4 workers 6 days to build a shed.

How many sheds could 2 of the workers make in 36 days, if all of the workers work at the same rate?

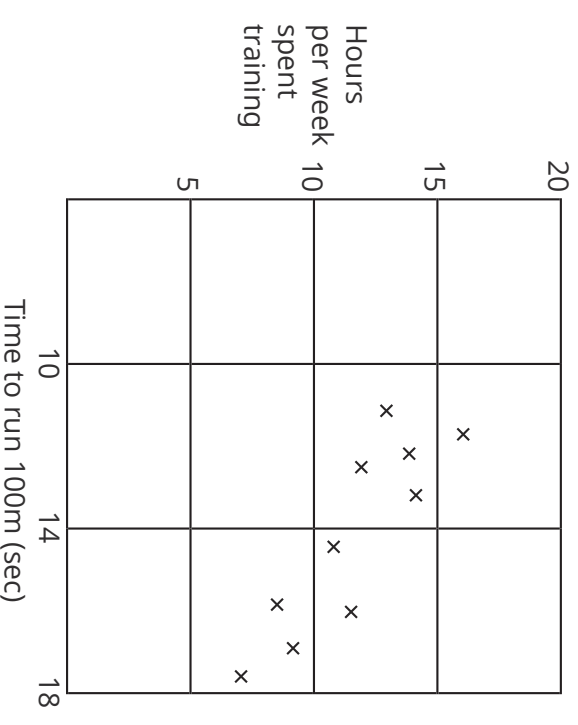


f

The scatter graph shows the time spent training and the time taken to run 100m for 10 members of The Whippets Running Club.

A new runner who does 12 hours of training a week joins the club.

How long would you expect it to take the runner to run 100m?



Maths Activity Mats Pack 1: Silver

2

Evaluate:

a

$0.3 \times 0.17 =$

$0.9 \div 0.12 =$

Evaluate:

c

$-3 - 8.5 =$

$10 - -1.3 =$

$-(-3 \times -2) =$

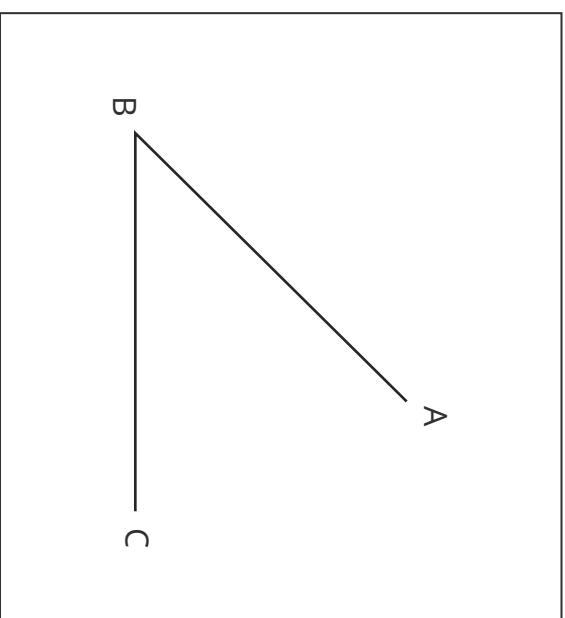
Write as a fully simplified fraction or mixed number:

b

$2\frac{5}{7} + \frac{4}{5} =$

$1\frac{1}{3} - \frac{5}{6} =$

Use a pair of compasses and ruler to construct the locus of points that are equidistant from AB and BC. Do not erase your construction lines.

d


A rectangle has length 6cm and width 8cm.

e

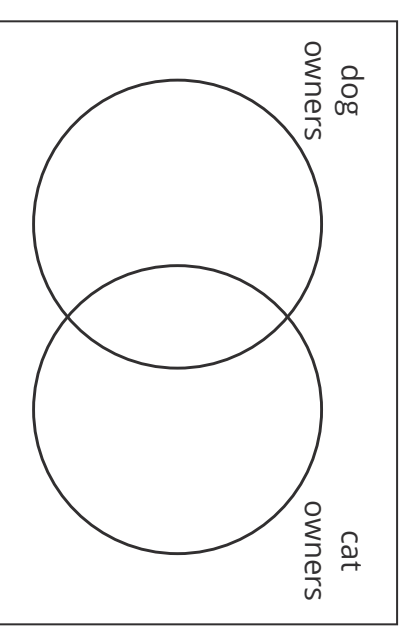
Calculate the length of its diagonal?

There are 30 children in 9C at Yulum Hir School. 4 of them have both a dog and a cat. 11 of them have no cat or dog. 8 of them have cats.

f

What is the probability that a child that is picked at random from class 9C has a dog?

You may use this Venn Diagram to help you.



Maths Activity Mats Pack 1: Silver

3

Expand:

$2(x + 5) =$

$3(2a + b) =$

a

Write as a fully simplified fraction:

32%

0.65

c

Find the LCM of 8 and 10.

Find the HCF of 24 and 20.

Express 240 as the product of prime factors.

e

The table shows the scores earned in a ball game by a group of children.

Find the mean, mode, median and range of the scores:

Score	Frequency
0	1
1	11
2	10
3	3

mean:

mode:

median:

range:

b

Evaluate:

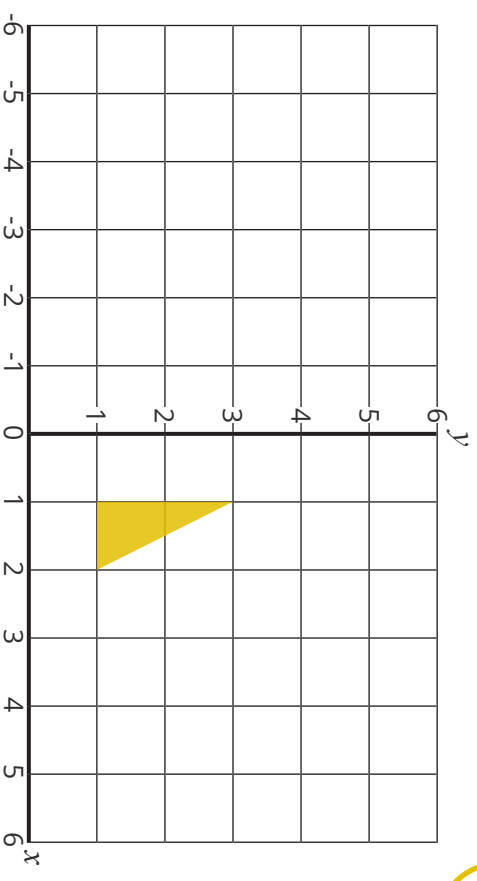
$\sqrt[3]{64} =$

$2^5 =$

d

Translate the shaded triangle by $\begin{pmatrix} -6 \\ 2 \end{pmatrix}$.

Rotate the shaded triangle around the point $(0, 0)$ 90° in an anti-clockwise direction.


f

Maths Activity Mats Pack 1: Silver

4

Round 8472 to 1 significant figure.

a

Round 3.4654 to 1 decimal place.

Convert to the given units.

$$0.4\text{kg} =$$

 g

$$5\text{ml} =$$

 l

b

Fully simplify:

$$4a - 2b - 3a + b =$$

c

There are some green, red, yellow and blue crayons in a box. The table shows the probability of taking green or red when a crayon is picked at random from the box. The probability of picking a yellow is the same as the probability of picking a blue.

What is the probability that a blue is picked?

Colour	Green	Red	Yellow	Blue
Probability	0.3	0.1		

d

When $x = 5$ and $y = -3$, evaluate:

$$x + y$$

$$2x - 3y$$

e

Evaluate, giving your answers as fully simplified fractions or mixed numbers:

$$2\frac{2}{5} \times 3\frac{2}{3} =$$

$$5\frac{3}{4} \div \frac{9}{16} =$$

f

Maths Activity Mats Pack 1: Silver

a Increase £40 by 35%.

b You can buy 15 mini gingerbread men for 92p at Pixie's Bakery. At Elvis's Bakery you can buy 7 for 43p.

Which bakery offers better value for money? Show all of your working.

What is the probability that, when 3 coins are flipped, exactly 2 of them will land on a head?

e

c ABC and DE are parallel lines, BE = CE, angle BEC = 50°. Find the value of x.

Give reasons for your answer.

x =

d A parallelogram-faced prism has height 4cm and base 10cm. The length between the parallelogram faces is 5cm. What is the volume of the parallelogram-faced prism?

f Simplify the ratio 6:10:12.

Annie and Billy share £3.50 in the ratio 2:3. How much money does each get?

Annie: Billy:

Maths Activity Mats Pack 1: Silver

6

Factorise:

$3x^2y + 9xy^2$

a

2, 5, 7, 12, 19, ...

What are the next two terms in this sequence?

b

5, 9, 13, 17 ...

 What is the n^{th} term of the sequence?

c

What is the 20th term in the sequence?

 Find the area and the circumference of a circle of diameter 6cm. Give your answer in terms of π

Area:

Circumference:

d

Express as a single power of 2:

$(2^3)^5$

8×2^5

e

Complete the tables of values for the graph:

$y = x^2 + 2$

x	-3	-2	-1	0	1	2	3
y							

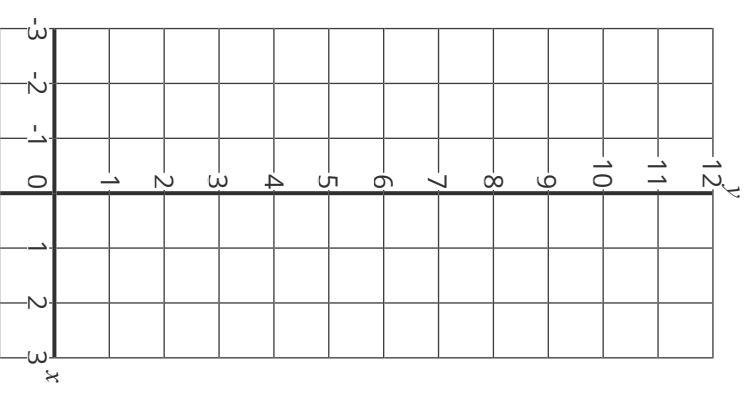
On the axes, draw the graph of:

$y = x^2 + 2$

Give the:

coordinates of the minimum point:

equation of line of symmetry:

f




Bram Stoker's
DRACULA

(1897)

- CHAPTER I -
JONATHAN HARKER'S JOURNAL

(Kept in shorthand.)

The story of 'Dracula' is told in epistolary form, pieced together from a series of letters and journal entries revealing the perspectives of different characters. Jonathan Harker is a junior lawyer who has been trusted by his employer to travel from England to Transylvania to conclude a real estate deal with the enigmatic Count Dracula. Harker is engaged to be married to Mina Murray. The following extract is taken from his first journal entry, dated 3rd May in Bistritz, Romania.

Having had some time at my disposal when in London, I had visited the British Museum, and made search among the books and maps in the library regarding Transylvania; it had struck me that some foreknowledge of the country could hardly fail to have some importance in dealing with a nobleman of that country. I find that the district he named is in the extreme east of the country, just on the borders of three states, Transylvania, Moldavia and Bukovina, in the midst of the Carpathian mountains; one of the wildest and least known portions of Europe. I was not able to light on any map or work giving the exact locality of the Castle Dracula, as there are no maps of this country as yet to compare with our own Ordnance Survey maps; but I found that Bistritz, the post town named by Count Dracula, is a fairly well-known place. I shall enter here some of my notes, as they may refresh my memory when I talk over my travels with Mina.

In the population of Transylvania there are four distinct nationalities: Saxons in the South, and mixed with them the Wallachs, who are the descendants of the Dacians; Magyars in the West, and Szekelys in the East and North. I am going among the latter, who claim to be descended from Attila and the Huns. This may be so, for when the Magyars conquered the country in the eleventh century they found the Huns settled in it. I read that every known superstition in the world is gathered into the horseshoe of the Carpathians, as if it were the centre of some sort of imaginative whirlpool; if so my stay may be very interesting. (Mem., I must ask the Count all about them.)

I did not sleep well, though my bed was comfortable enough, for I had all sorts of queer dreams. There was a dog howling all night under my window, which may have had something to do with it; or it may have been the paprika, for I had to drink up all the water in my carafe, and was still thirsty. Towards morning I slept and was wakened by the continuous knocking at my door, so I guess I must have been sleeping soundly then. I had for breakfast more paprika, and a sort of porridge of maize flour which they said was "mamaliga," and egg-plant stuffed with forcemeat, a very excellent dish, which they call "impletata." (Mem., get recipe for this also.) I had to hurry breakfast, for the train started a little before eight, or rather it ought to have done so, for after rushing to the station at 7:30 I had to sit in the carriage for more than an hour before we began to move. It seems to me that the further east you go the more unpunctual are the trains. What ought they to be in China?

All day long we seemed to dawdle through a country which was full of beauty of every kind. Sometimes we saw little towns or castles on the top of steep hills such as we see in old missals; sometimes we ran by rivers and streams which seemed from the wide stony margin on each side of them to be subject to great floods. It takes a lot of water, and running strong, to sweep the outside edge of a river clear. At every station there were groups of people, sometimes crowds, and in all sorts of attire. Some of them were just like the peasants at home or those I saw coming through France and Germany, with short jackets and round hats and home-made trousers; but others were very picturesque. The women looked pretty, except when you got near them, but they were very clumsy about the waist. They had all full white sleeves of some kind or other, and most of them had big belts with a lot of strips of something fluttering from them like the dresses in a ballet, but of course there were petticoats under them. The strangest figures we saw were the Slovaks, who were more barbarian than the rest, with their big cow-boy hats, great baggy dirty-white trousers, white linen shirts, and enormous heavy leather belts, nearly a foot wide, all studded over with brass nails. They wore high boots, with their trousers tucked into them, and had long black hair and heavy black moustaches. They are very picturesque, but do not look prepossessing. On the stage they would be set down at once as some old Oriental band of brigands. They are, however, I am told, very harmless and rather wanting in natural self-assertion.

It was on the dark side of twilight when we got to Bistritz, which is a very interesting old place. Being practically on the frontier—for the Borgo Pass leads from it into Bukovina—it has had a very stormy existence, and it certainly shows marks of it. Fifty years ago a series of great fires took place, which made terrible havoc on five separate occasions. At the very beginning of the seventeenth century it underwent a siege of three weeks and lost 13,000 people, the casualties of war proper being assisted by famine and disease.

Count Dracula had directed me to go to the Golden Krone Hotel, which I found, to my great delight, to be thoroughly old-fashioned, for of course I wanted to see all I could of the ways of the country. I was evidently expected, for when I got near the door I faced a cheery-looking elderly woman in the usual peasant dress—white undergarment with long double apron, front, and back, of coloured stuff fitting almost too tight for modesty. When I came close she bowed and said, "The Herr Englishman?" "Yes," I said, "Jonathan Harker." She smiled, and gave some message to an elderly man in white shirt-sleeves, who had followed her to the door. He went, but immediately returned with a letter:—

"My Friend.—Welcome to the Carpathians. I am anxiously expecting you. Sleep well to-night. At three to-morrow the diligence will start for Bukovina; a place on it is kept for you. At the Borgo Pass my carriage will await you and will bring you to me. I trust that your journey from London has been a happy one, and that you will enjoy your stay in my beautiful land.

"Your friend,
"DRACULA."



Dracula **Comprehension Questions**

1. How would you describe the character of Harker?

2. What impression are you given of Transylvania?

3. How does Stoker inject a sense of anxiety into proceedings?

4. What, on the other hand, sets a more relaxed tone?



5. What are your initial impressions of Count Dracula?



La comida y la bebida

Comidas e ingredientes / Food and Ingredients



el aceite
oil



el arroz
rice



la barra (de pan)
(bread) loaf



el bocadillo
sandwich



el gazpacho
cold soup



el huevo
egg



la mantequilla
butter



la pimienta
pepper



el queso
cheese



la sal
salt



la salsa
sauce

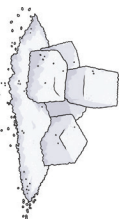


la sopa
soup



la tortilla
omelette

Dulces / Sweets



el azúcar
sugar



los churros
fritters



el flan
crème caramel



la galleta
biscuit



el helado
ice cream



la mermelada
jam



la nata
cream



el pastel
cake, pie

La comida y la bebida

Frutas y verduras / Fruit and Vegetables



el ajo **la cebolla** **la col** **los champiñones** **la fresa** **los guisantes** **las judías verdes** **las legumbres** **la manzana**
garlic onion cabbage mushrooms strawberry peas string beans vegetables, pulses apple



la naranja **la patata** **la pera** **el pimiento** **la piña** **el plátano** **las uvas** **la zanahoria** **el melocotón** **la lechuga**
orange potato pear pepper pineapple banana grapes carrot peach lettuce

Las bebidas / Drinks



el agua mineral (con/sin gas)
(fizzy/still) mineral water

el café
coffee

el zumo (de fruta)
(fruit) juice

la leche
milk



el té
tea

el hielo
ice

La comida y la bebida

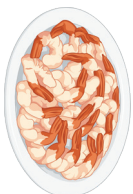
El pescado / Fish



el atún
tuna



los calamares
squid



las gambas
prawns



el bacalao
cod



los mariscos
seafood



la merluza
hake

La carne / Meat



el bistec
steak



el chorizo
sausage



la chuleta
chop



el filete
steak



el jamón (de york)
boiled ham



el jamón serrano
cured ham



el perrito caliente
hot dog



el pollo
chicken



la salchicha
sausage



el salchichón
salami

At the Café - Comida y Bebidas

p c a l b b b u n c a f é v c o v f b
 a h m k r z u e f p y f r v p g a u c
 t u x r é n b l h j a q a s f é z n b
 a r g g j f é f n g r d k k l s z b l
 t r n q i r c m u l s r j r u n m o y
 a o a u n a h a m b u r g u e s a c t
 s s v p v r r z d o x h g d r d b a p
 b c f e u t l g f y g n a i r g o d h
 r o r p u e m é m n o d f a s c e i q
 a n l f n z r c u d a n j o s v k l c
 v c z k a v r q i n d h o e x m q l g
 a h y v p t e a o m m d r s g l a o h
 s o t b i b p m i s i f c u m i t n b
 l c v m z t i u q t e q e c n g y t s
 w o v s z l x p a r r k m z k t q f q
 é l b s a f n b n k j z f m j t é i é
 z a u n h s n u u p c m é c h c a g x
 q t u n z u m o d e n a r a n j a m s
 g e f m z r n p j j e o q p n w w n i

The English words are written in Spanish in the word search. See if you can find all the Spanish foods and drinks hidden in the word search.

- | | | |
|-------------|--------------|---------------------------|
| a coffee | a pizza | an orange juice |
| a hamburger | a soft drink | chips |
| a lemonade | a sandwich | churros with
chocolate |
| a milkshake | a tea | (spanish pastry) |