

All about octopuses

Octopuses are soft-bodied molluscs in the cephalopod group, alongside squid and cuttlefish. There are about 300 species, living in every ocean from rock pools to the deep sea, but none in fresh water.

An octopus has three hearts, copper-based blue blood and no bones apart from its beak. Its skin can change colour and texture in an instant, and its suckers can taste and smell what they touch.

Quick facts

Group	mollusc (cephalopod)
Kinds	about 300
Arms	8
Hearts	3
Blood	blue
Lives	in every ocean
Eats	crabs, shrimps, clams, fish
Life span	often 1 to 2 years
Biggest	giant Pacific octopus

Key words

cephalopod: the mollusc group with octopuses, squid and cuttlefish

invertebrate: an animal with no backbone

haemocyanin: a copper-rich protein that carries oxygen in octopus blood

chromatophore: a skin cell with colour that helps change colour

neuron: a nerve cell

mimicry: copying another animal to stay safe

Fun facts

Three hearts

Two pump blood through the gills and one pumps it around the body.

Arms, not tentacles

Scientists call an octopus's eight limbs arms.

Rock door

Some octopuses pull a rock across the door of their den.

Coconut homes

The veined octopus carries coconut shells to hide in.

Going deeper

- Since 2012 UK law on animal experiments has protected all cephalopods, because they may feel pain.
- Octopus blood uses haemocyanin, a copper-rich protein that carries oxygen well in cold water with little oxygen.
- Engineers study octopus arms to build soft robots that can grip and move objects.
- Skin cells called chromatophores let it change colour, and tiny muscles change its skin texture.

Think about it: Camouflage, ink and mimicry all help octopuses survive. Which do you think works best, and why?

Octopuses

Use the words in the box to fill the gaps. Each word is used once.

Name _____ Date _____ Score _____ / 10

Word bank cephalopods chromatophores haemocyanin invertebrate
Jurassic mantle mimic neurons robots suckers

1. Octopuses can taste and smell with their _____.
2. Octopuses evolved in the _____ period.
3. About two-thirds of an octopus's _____ are in its arms.
4. The bag-like body that holds most organs is the _____.
5. Octopuses, squid and cuttlefish are molluscs called _____.
6. Engineers study octopus arms to build soft _____.
7. Skin cells called _____ help an octopus change colour.
8. An octopus has no backbone, so it is an _____.
9. The _____ octopus copies lionfish and sea snakes.
10. Octopus blood carries oxygen using a copper-rich protein called _____.

Octopuses

Read each sentence. Circle True or False.

Name _____ Date _____ Score _____ / 7

- | | | |
|---|----------------------------|-----------------------------|
| 1. Octopuses are vertebrates. | ☐ True | ☐ False |
| 2. All octopuses are venomous. | ☐ True | ☐ False |
| 3. Octopus blood carries oxygen using copper. | ☐ True | ☐ False |
| 4. The common octopus has about as many neurons as a dog. | ☐ True | ☐ False |
| 5. Octopuses can briefly crawl out of the water. | ☐ True | ☐ False |
| 6. Most of an octopus's neurons are in its central brain. | ☐ True | ☐ False |
| 7. "Octopi" is the standard English plural. | ☐ True | ☐ False |

Octopus word match

Write the letter of the right meaning in each box.

Name _____ Date _____ Score _____ / 7

- | | |
|---|---|
| ☐ mimicry | A a tube used to breathe and to jet away |
| ☐ siphon | B a copper-rich protein that carries oxygen in octopus blood |
| ☐ haemocyanin | C copying another animal to stay safe |
| ☐ invertebrate | D a skin cell with colour that helps change colour |
| ☐ chromatophore | E a nerve cell |
| ☐ neuron | F a soft-bodied animal group, including snails and clams |
| ☐ mollusc | G an animal with no backbone |

Octopuses: think and discuss

Read the facts, then write your answers. There are no wrong answers if you give reasons.

Name _____ Date _____

Rock door

Some octopuses pull a rock across the door of their den.

Squeezy!

With no bones, only the beak limits how small a gap it fits through.

Coconut homes

The veined octopus carries coconut shells to hide in.

Grow back

An octopus can grow back a lost arm.

Engineers copy octopus arms to build soft robots. What jobs could a soft robot arm do better than a hard one?

Octopuses may feel pain, and UK law protects them in science experiments. Should animals that may feel pain have special protection? Give reasons.

Octopus words

Find each word and tick it off. The words can go in any direction, even backwards.

Name _____ Date _____ Found _____ / 14

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

- ☐ arms ☐ beak ☐ camouflage ☐ gills ☐ hearts ☐ ink
☐ invertebrate ☐ mantle ☐ mollusc ☐ octopus ☐ predator
☐ siphon ☐ suckers ☐ venom

Octopuses

Answers are shown in red.

Name _____ Date _____ Score _____ / 10

Word bank cephalopods chromatophores haemocyanin invertebrate
Jurassic mantle mimic neurons robots suckers

1. Octopuses can taste and smell with their suckers.
2. Octopuses evolved in the Jurassic period.
3. About two-thirds of an octopus's neurons are in its arms.
4. The bag-like body that holds most organs is the mantle.
5. Octopuses, squid and cuttlefish are molluscs called cephalopods.
6. Engineers study octopus arms to build soft robots.
7. Skin cells called chromatophores help an octopus change colour.
8. An octopus has no backbone, so it is an invertebrate.
9. The mimic octopus copies lionfish and sea snakes.
10. Octopus blood carries oxygen using a copper-rich protein called haemocyanin.

Octopuses

Answers are shown in red.

Name _____ Date _____ Score _____ / 7

1. Octopuses are vertebrates.
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☐ True☒ False☒ True☐ False☒ True☐ False☒ True☐ False☒ True☐ False☐ True☒ False☐ True☒ False

Octopus word match

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| G invertebrate | D a skin cell with colour that helps change colour |
| D chromatophore | E a nerve cell |
| E neuron | F a soft-bodied animal group, including snails and clams |
| F mollusc | G an animal with no backbone |

Octopus words

The hidden words are shaded in red.

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

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☐ invertebrate ☐ mantle ☐ mollusc ☐ octopus ☐ predator
☐ siphon ☐ suckers ☐ venom