FACT SHEET · AGES 11–14

All about octopuses

Acorn & Ink

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

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.

Blue blood
Octopus blood is blue because it contains copper.

Going deeper

- An octopus has about 500 million neurons, as many as a dog, and about two-thirds are in its arms.
- 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.
- Since 2012 UK law on animal experiments has protected all cephalopods, because they may feel pain.

> **Think about it:** Octopuses are very clever but usually live only a year or two. How might a short life affect the way they learn?

Facts: Wikipedia “Octopus” (CC BY-SA 4.0), Natural History Museum, National Geographic, Shedd and Bristol aquariums · our own words

Sheet OCT-TEEN-FACT-11688

TOPIC SHEET · AGES 11–14

Octopuses

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

TOPIC SHEET · AGES 11–14

Octopuses

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Read each sentence. Circle True or False.

Name _____ **Date** _____ **Score** _____ / 7

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

Facts: Wikipedia "Octopus" (CC BY-SA 4.0), Natural History Museum and others

TOPIC SHEET · AGES 11–14

Octopus word match

Write the letter of the right meaning in each box.

Name _____ Date _____ Score _____ / 7

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

TOPIC SHEET · AGES 11–14

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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.

Coconut homes
The veined octopus carries coconut shells to hide in.

Copycat
The mimic octopus pretends to be a lionfish or a sea snake.

Tasting with arms
The suckers can taste what they touch.

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

Octopuses are very clever but usually live only a year or two. How might a short life affect the way they learn?

Facts: Wikipedia “Octopus” (CC BY-SA 4.0), Natural History Museum and others

Sheet OCT-TEEN-DYK-17157

WORD SEARCH · LARGE · HARD

Octopus words

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

Name _____ Date _____ Found _____ / 14

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

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

Acorn & Ink

Octopuses

Answers are shown in red.

Name _____ Date _____ Score _____ / 10

Word bank

cephalopods **chromatophores** **haemocyanin** **invertebrate** **Jurassic** **mantle** **mimic** **neurons** **robots** **suckers**

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

ANSWERS · TOPIC SHEET · AGES 11–14

Acorn & Ink

Octopuses

Answers are shown in red.

Name _____ **Date** _____ **Score** _____ / 7

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

ANSWERS · TOPIC SHEET · AGES 11–14

Octopus word match

Acorn & Ink

Answers are shown in red.

Name _____ Date _____ Score _____ / 7

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

ANSWERS · WORD SEARCH · LARGE · HARD

Octopus words

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The hidden words are shaded in red.

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

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