Year 6 Remote Learning

ANSWER PACK

8th- 12th February 2021

Maths Answers

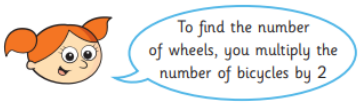
Lesson 1:

Find a rule – one step

1 Whitney makes a pattern of triangles using sticks.
Complete the table below.

Number of triangles	1	2	3	4	5	10	30
Number of sticks	3	6	9	12	15	30	90

2 Complete the tables.



a)

Number of bicycles	1	2	5	9	12	16
Number of wheels	2	4	10	18	24	32

b)

Number of ants	1	2	5	3	4	16
Number of legs	6	12	30	18	24	96

Explain how to find the number of legs.

Multiply the number of ants by 6

3 Calculate the outputs for the function machines below.

a) input 50 → + 5 → output 55

b) input 50 → − 7 → output 43

c) input 50 → × 2 → output 100

d) input 50 → ÷ 10 → output 5

4 Calculate the inputs for the function machines.

a) input 36 → + 9 → output 45

b) input 23 → − 2 → output 21

c) input 35 → × 10 → output 350

d) input 27 → ÷ 3 → output 9

5 Write the missing functions in the function machines.

a)

input		output
2	×5	10
5		25
10		50

b)

input		output
8	+7	15
0		7
−3		4

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6 Calculate the missing inputs and outputs for the function machine.

input		output
8	+10	18
4		14
5.5		15.5
−2		8

7 Look at the function machine.

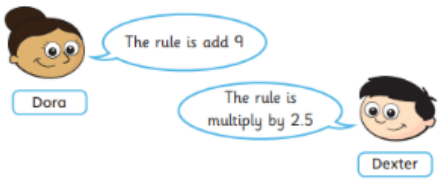
input		output
15		65
20		70
50		100

a) What is the output, if the input is zero? 50

b) What is the input, if the output is zero? −50

8 Here is a function machine.

input 6 → ☐ → output 15



Who do you agree with? Both

Explain your answer.

9 In a function machine, if the input is 3 and the output is 12, what could the function be?

Write two different functions and complete the table of outputs for each function.

input 3 → ×4 → output 12

Input	3	4	5	10	20	100
Output	12	16	20	40	80	400

input 3 → +9 → output 12

Input	3	4	5	10	20	100
Output	12	13	14	19	29	109

Red Answers

Varied fluency

1a. 97, 118; 112, 133; 52, 73
2a. + 13
3a. 11; 68
4a. 51; 43

RAPs

1a. Various answers, for example:
–10, 22 stickers; –9, 23 stickers; –8, 24 stickers.

2a. There are 23 horses. Various answers, for example:
This is because there are 10 Spartans; if the function for the number of horses is the number of Spartans + 13, then the calculation to work this out is 10 + 13 = 23.

3a. 5 is the odd one out because 6 + 8 = 14 and 8 + 8 = 16. 5 + 8 = 13, but there is no number card for 13 (to match 5).

Gold Answers

Varied fluency

9a. 98, 14; 168, 24; 84, 12
10a.–9.1
11a. 60; -16
12a. 2.5; -5.8

RAPs

7a. Various answers, for example:
–£6, -£12.70; –£7, -£13.70; –£8, -£14.70.

8a. Various answers, for example:
The output per cup would be 0.14L or 140ml.
This is because the function for the calculation would be ÷20 (because there are 20 cups), so the calculation to work this out is 2.8 ÷20 = 0.14.

9a. 12 is the odd one out because 28 x 0.75 = 21 and 48 x 0.75 = 36. 12 x 0.75 = 9, but there is no number card for 9 (to match 12).

Deepen the moment...

Dora's input is 16.

Her output is 8.

Own possible answers.

Lesson 2:

Find a rule – two step

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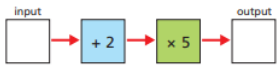
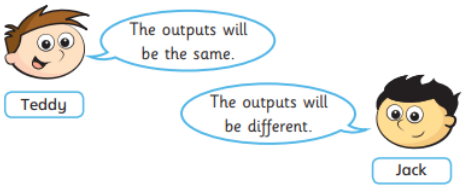
1 Use the function machine to complete the table.

Input	1	2	3	5	10	50
Output	7	12	17	27	52	252

2 Here is the same function machine with the steps in the reverse order.





Explain to a partner who you think is correct.

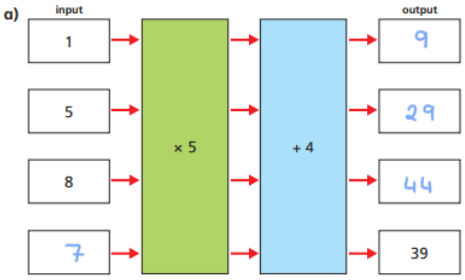
Use the function machine to complete the table.

Input	1	2	3	5	10	50
Output	15	20	25	35	60	260

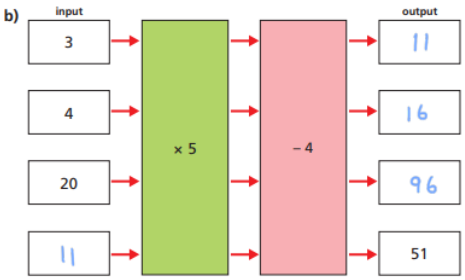
Who is correct? Jack

3 Work out the missing outputs and inputs.

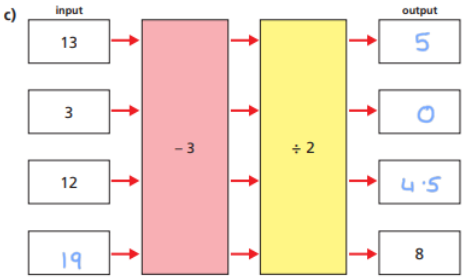
a)



b)



c)



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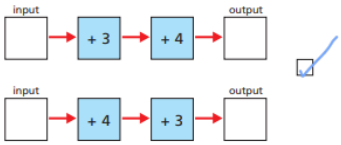
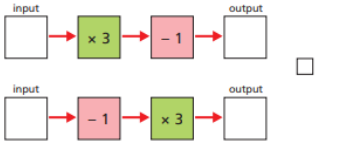
4 Tick the pairs of function machines that will give the same outputs for a given input.

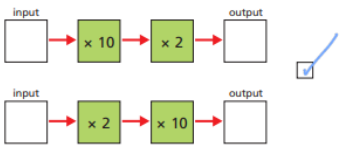
a)



b)



c)



Explain your reasoning to a partner.

5 Here are some 2-step function machines.

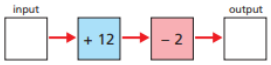
For each machine, write a single step that would give the same output.

Check your answers by inputting values.

a)

× 10

b)



+ 10

c)

× 4

Can all 2-step function machines be written as a 1-step function machine?

Talk about it with a partner.

6 Here is a function machine.

a) Complete the table.

Input	10	3	13	73
Output	28	0	40	280

b) Rosie puts a number into the machine and she gets out the same number.

Work out Rosie's number.

4

7 Mr Hall and Mrs Rose order some photos online.

a) Mr Hall orders 16 photos.

How much does he pay?

£4·45

b) Mrs Rose pays £6.05

How many photos did she order?

24

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Red Answers

Varied fluency

1a. 18, 8, 6
2a. 1, 12; 11, 32; 7, 24
3a. +3

RAPs

1a. various answers, for example: +1; -2

2a. False. This doesn't work for an input of 5
to give an output of 15. The function could be x2, +5.

3a. 1

Gold Answers

Varied fluency

7a. 33, 183.75, -45

8a. 4.5, 14; 12 $\frac{1}{2}$, 62; 9.5, 44

9a. -16

RAPs

7a. various answers, for example: +15; ÷2

8a. False. This doesn't work for an input of 7

to give an output of 2.7. The function could be +20, ÷10.

9a. 5

Deepen the moment...

Children should have found out how much butter and
butter cream Karen needed and shown their working out to
provide their explanation.

5y + 15 = 110g
5y = 95g
y = 19
Butter = 108g
Buttercream = 450g

Lesson 3:

Forming expressions

1 Tommy uses multilink cubes to represent an unknown number and base ten ones to represent 1

= x = 1

Write algebraic expressions to describe the sets of cubes.

The first one has been done for you.

a) $2x + 3$

b) $3x + 5$

c) $3x$

d) $x + 3$

e) $2x + 5$

f) $5x + 2$

g) $2x + 6$

h) $4x + 9$

2 Use Tommy's method to represent these expressions.

a) $x + 2$ c) $3x + 1$

b) $2x$ d) $x + 6$

Compare answers with a partner.

3 Use cubes to help you simplify the following expressions.

The first one has been done for you.

a) $2y + 5 + y$ $3y + 5$

b) $3a + 2 + a + a$ $5a + 2$

c) $6p + 2 - 2p$ $4p + 2$

d) $m + 4 + 3m - 3$

$4m + 1$

4 Complete the function machines.

a)

input		output
2	+4	6
7		11
y		$y+4$

b)

input		output
2	×2	4
5		10
y		$2y$

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c)

input		output
6	−3	3
12		9
y		$y-3$

d)

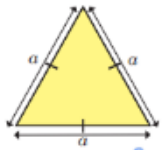
input		output
30	÷10	3
50		5
y		$\frac{y}{10}$

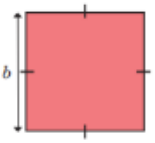
5 Match each statement to the equivalent algebraic expression.

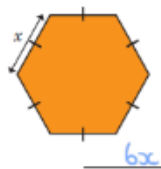
Write the missing statements.

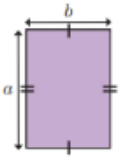
5 more than y	$2y$
y less than 5	$y - 5$
y multiplied by 5	$5 - y$
y divided by 5	$y + 5$
double y	$5y$
5 less than y	y^2
y multiplied by y	$\frac{y}{5}$

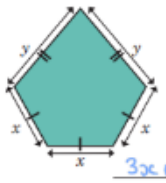
6 Write an algebraic expression to represent the perimeter of each shape.

a)  $3a$

b)  $4b$

c)  $6x$

d)  $2a + 2b$

e)  $3x + 2y$

7 Complete the bar models.

a) $2a$ | a | a

b) $2b + 10$ | b | b | 10

c) c | $\frac{c}{4}$ | $\frac{c}{4}$ | $\frac{c}{4}$ | $\frac{c}{4}$

d) $d + 5$ | $\frac{d}{2}$ | $\frac{d}{2}$ | 5

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Red Answers

Varied fluency

1a. $a + 3$, $b + 3$

2a. r

3a. +3; x2

RAPs

1a. $2y + 8$

2a. Raza has multiplied instead of adding.

Her expression should be $a + 5$.

3a. the function is +5 so the output will be 17.

Gold Answers

Varied fluency

7a. $2a - 5$, $b + 4 - 5$

8a. e

9a. x 2.5, ÷ 8

x7, + 6.3

RAPs

7a. $8.5y$

8a. Nya has added the 5 and 1.5 together to make 6.5.
She should have multiplied them together. Her expression should be $7.5a - 4$.

9a. the function is x2 + 0.5 so the output will be 44.5

Deepen the moment...

No, because $2m + 1$ isn't the same as $2m + 2$

$2m + 1$

Input

× 2

+ 1

$2m + 2$

Input

+ 1

× 2

Children may use examples with numbers to show this.

Substitution

1 = 4 = 5

Use the given facts to work out the calculations.

a) + +

13

b) + −

3

c) + + + +

23

2 = 12 = 5

Use the given facts to work out the calculations.

a) −

7

b) ×

60

c) Create your own calculation that will be equal to 22

e.g. △ + □ + □

3 If $x = 5$, write the values of the expressions in the corresponding grid.

The first one has been done for you.

$3x$	x^2	$2x - 5$
$4x + 2$	$\frac{x}{2}$	$2(x + 1)$
$7x$	$x + 9$	$x - 7$

15	25	5
22	2·5	12
35	14	−2

4 If $a = 10$ and $b = 6$, work out the values of the expressions.

a) $a + b =$ 16

b) $a - b =$ 4

c) $2a =$ 20

d) $2a + b =$ 26

e) $3a - 17 =$ 13

f) $2(a - b) =$ 8

5 If $m = \frac{4}{5}$ and $k = 0.1$, work out the value of $m + 2k$

1

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6

Mo

It does not matter what p and q are, $p + q$ and $q + p$ will always give the same answer.

Do you agree with Mo? Yes

Explain your answer.

Addition is commutative.

7 $m = 7$ $n = 5$

Write >, < or = to compare the expressions.

a) $2m$ > 10

b) $n - 1$ < 5

c) $2n + m$ < $2m + n$

d) $7n$ = $5m$

8 $a = 10$

Write the expressions in order, starting with the smallest value.

$5a$	$a + 5$	$\frac{a}{5}$	a^2
$\frac{a}{5}$	$a + 5$	$5a$	a^2

9 $a = 15$

Write three different algebraic expressions that give a value of 40

e.g.

$2a + 10$ $3a - 5$ $\frac{8a}{3}$

10 Complete the table.

x	$5x$	$5x - 1$
2	10	9
10	50	49
12	60	59
5	25	24
7	35	34
20	100	99

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Red Answers

Varied fluency

1a. Mo = 90; Millie = 10

2a. 25

3a. B

4a. A = 20; B = 8; C = 4

RAPs

1a. Yes; $d = 14 + 5 = 19$, so $f = 19 - 2 = 17$

2a. $a = 1$; $b = 7$

3a. False; $2f = 40$, so $e = 40 - 15 = 25$

Gold Answers

Varied fluency

9a. Jack = 366; Ivy = 384

10a. -3.7

11a. B

12a. A = 0.15; B = 2.75; C = 8

RAPs

7a. No; $a = (81 \div 10) + 1.25 = 9.35$, so $c = 9.35 + 10 = 19.35$

8a. $a = 44$; $b = 11$

9a. False; $a = 55 \div 11 = 5$

Deepen the moment...

No Whitney is incorrect. c could have any value.

Amir has put the 2 next to the 5 to make 25 instead of multiplying 2 by 5

The correct value of x would be 16

Lesson 5: Arithmetic Test Paper 2

Guidance: Children will have 30 minutes for this test. Long division and long multiplication questions are worth **2 marks** each. Children will be awarded 2 marks for a correct answer. They may get 1 mark for showing a formal method. All other questions are worth 1 mark each.

question	answer	marks
1	**150**	1
2	**1001**	1
3	**924**	1
4	**6.1**	1
5	**264**	1
6	**9**	1
7	**4514**	1
8	**756**	1
9	$\frac{10}{8}$ or $\frac{5}{4}$ or $1\frac{1}{4}$	1
10	**2.816**	1
11	**27**	1
12	**90**	1
13	**6710**	1
14	**0.0503**	1
15	**16 486**	1
16	**2700**	1
17	**18.55**	1
18	$\frac{1}{3}$ or $\frac{4}{12}$	1
19	**841.5** or **841r4**	1
20	**2835**	1
21	**1175**	1

question	answer	marks
22	**59 200**	1
23	**7.81**	1
24	$\frac{1}{24}$	1
25	**240 625**	1
26	**175**	1
27	**2356**	2
28	$1\frac{23}{30}$	1
29	**28**	1
30	$\frac{2}{5}$	1
31	**168**	2
32	$1\frac{14}{15}$	1
33	**26**	1
34	**103 860**	2
35	$\frac{3}{14}$	1
36	**56**	2
		Total 40

Deepen the moment...

If A = 108 then B = 27 and C = 9

Children should explain and recognise the relationship between decimal notation and percentage.

English Answers

Lesson 1: Fastest Finger!

The Lanterns

I remember when the lanterns first appeared on the horizon. It was close to midnight, as most strange occurrences often are, and I was lying awake in my bed desperately counting down the hours to morning. Morning would mean it was time for the harvest, and the start of the new calendar. The elders had always told us what happened if you were awake at midnight before the harvest, when the lights from the others would try to lure children away. We hadn't believed it, of course, but they'd insisted and so something about it had crept into our imaginations.

By that point, I'd been training as a healer for a year and was getting quite good at it. I knew most of the basic herbs and elixirs to heal the wounded farmers, but I still had much to learn. That night, when the lanterns appeared on the horizon, I was destined to learn quickly.

The weather was warm, even at midnight, with a clinging humidity that threatened to suffocate you if you weren't careful. Shadowy wisps of mist clung to the edge of the riverbank as I wandered out of the hut and made my way to the top of the wooded hill. I'd hoped to get a better look at the lanterns from up there but, by the time I reached the summit, they were already there ahead of me.

From a distance, as I clambered up the rocks and slippery gravel on the side of the mound, I had been convinced that the lamps were floating through the air, like the paper lanterns we released every new moon. When I arrived, I realised that I was wrong. What I saw, shocked me.

Each light was held in the pale hand of a ghostly figure. There were maybe a hundred, maybe more, each one no taller than myself and slender like elves. Their bodies were almost transparent, only the moonlight glinting from their edges gave them any shape at all. It took me a moment to take in the scene before one of them broke away from the group and floated towards me.

Perhaps I should have run, sprinted down the hill and hidden away in my bed and pretended like it had never happened. Still, I was never one to run away from adventure. Strangely, I wasn't scared by the creatures; if anything, they gave off an air of sadness rather than terror.

When the spirit reached me, it spoke to me. Its soft voice seemed to be a whisper on the night air, nothing more than hushed wind, but it was echoed by all of the others and soon filled my head with its noise. "We need you. We need you to heal us. It is important."

Now, I was scared. How could I heal these phantom spirits that had appeared from nowhere? They were insistent, though. Gradually, they surrounded me and took my arms and legs and lifted me into the air. They weren't rough, or menacing, just gentle and urgent. We rose higher and higher until we were surrounded by clouds. Tufts of cold mist lazily drifted past, the lanterns lighting the way the entire time until we burst into darkness. Up ahead, a pinpoint of light slowly started to grow until, finally, it became an ivory tower.

Lesson 1: The Lantern

1. The harvest and the beginning of the new calendar
2. It was going to happen/it had to happen
3. Translucent Delicate
4. Lanterns
5. Terror
6. Give 1 mark for two correct answers. Give 2 marks for three or more correct answers.
   - False
   - False
   - True
   - False
7. a) Something about it had crept into our imaginations b) I had been convinced that the lamps were floating through the air or What I saw, shocked me

Lesson 2:

For each question, swap the highlighted comma splice for one of the options below:

- Full stop and start a new sentence (with a capital letter)
- Semi-colon
- Dash
- Conjunction (make sure to select one that would make sense. Examples provided for each sentence)

1. Germany invaded Poland in 1939, this started the second World War.

Possible conjunctions: and, so

2. World War 2 was a global event, countries had to mobilise their armies quickly.

Possible conjunctions: and, so

3. Many people were evacuated quickly before war was even announced, the fear of bombings forced this to happen.

Possible conjunctions: and, because, for, since, as

4. During the evacuation process, many children left their homes, they must have been terrified.

Possible conjunctions: and, because, for, since, as

5. Hitler wanted Germany to invade Britain, he ordered thousands of planes to drop bombs over British cities.

Possible conjunctions: and, so

6. From September 1940 until May 1941, Britain endured the Blitz, Germany dropped bombs on cities, factories and houses.

Possible conjunctions: and, because, for, since, as, while, when

7. Fifty million people lost their lives, hundreds of millions of people were injured.

Possible conjunctions: and, while

8. VE day, which stands for Victory in Europe, signalled the end of the war with Germany, this happened in May 1945.

Possible conjunctions: and, when

Lesson 3:

(Letter plan to be sent to your teacher for marking)

Lesson 4:

(Draft of your letter to be sent to your teacher for marking)

Lesson 5:

(Editing and/or redrafts of your letter to be sent to your teacher for marking)

Reading for Productivity Lesson 1 PSHE Answers:

1: Key

1. The Media and Body Image
2. The Body Image Advertising Portrays
3. The Effects of False Body Image Advertising
4. In Comes Social Media
5. Plastic Surgery and Photoshop
6. A Toxic Mirror
7. The Answer to Body Anxiety?

2: True or False key

1. T	7. T
2. T	8. F
3. F	9. T
4. F	10. T
5. T	11. F
6. F	12. T

3: Advertising

4: dog food commercials feature talking dogs, nobody thinks that they are actually talking.

5: Social media networks are the primary way young people communicate and their main channel to the outside world.

Reading for Productivity Lesson 2 Computing Answers:

1) The aims of Safer Internet Day are to raise awareness of current online issues and to help young people look after their wellbeing and safety when using the internet.

2) True; True; False; False

3) Pupils' own responses, such as: Young people should be aware of how to stay safe online and need to be making decisions about who and what they can trust, such as when playing games and on social media.

4) Pupils' own responses, such as: There are completely false stories which are deliberately published to make people believe something that is a lie or to get lots of people to visit their website. There are also stories that are not completely accurate but do have some truth to them. This is because the writers have not researched the facts properly or are exaggerating the truth.

5) Fabricated

6) Funny

7) Pupils' own responses, such as: Users can click the 'Report' button to report anything that makes them feel unsafe or unhappy. The 'Help' button can be used if they have a problem with an app and they can use 'Block' if they don't want to get any more messages from someone.

8) **59%**

9) Pupils' own responses, such as: I would tell them that they should try to cut down on their screen time and encourage them to do other things or take up a new hobby. I would say that they need to take regular breaks away from their electronic devices and try to balance screen time with other things, such as being with their friends

Deepen the moment...

Pupils' own responses, such as: The internet is a great source of information that has so much to offer and lots of people, all over the world spend time online every day. But there is also fake news and information on the internet, so it is important that people know how to stay safe and make the right decisions about who or what they can trust online

Reading for Productivity Lesson 3 Geography Answers:

1. What challenge will humankind face as we enter the new millennium?
   to transform the existing economy into one that does not threaten or destroy the environment.

2. What 2 events does the text compare the Environmental Revolution to?
   Agricultural Revolution and the Industrial Revolution of the past.

3. Why couldn't people in the past stop the destruction of the environment?
   - ☐ They were ignorant simple peaceful people.
   - ☐ They did not realize that their actions were slowly destroying the environment.
   - ☐ They did not know people in the governments.
   - ☐ Their governments did not believe that the environment was being destroyed.

4. The people of today have become more aware of the relationship between the weather, environment and global economies because of ...
   Extensive media coverage

5. Give 2 examples the texts give of how the weather can negatively impact our planet?
   Various answers: Fishery collapses, water shortages, rainforests burning uncontrollably, sudden deaths of birds, dolphins and fish, record heat waves, and raging storms that cause widespread destruction

6. What is an environmental activist?
   An environmental activist is a person who advocates for, or works towards, protecting the natural environment from destruction or pollution.

7. Who is paying more attention to preserving the environment today?
   directors of large corporations, government ministers, prominent scientists and intelligence agencies

8. What is a 'green consumer'?
   Companies who are opting for sources of electricity that are climate-friendly and buy paper that has a high recycled content

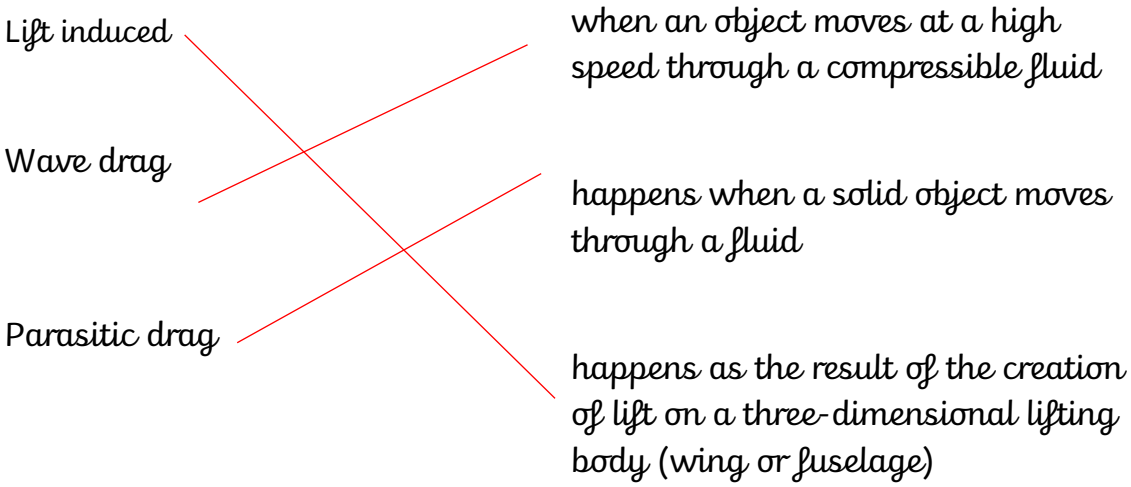
9. What is the writer trying to convey in the expression *Time is of the essence*?
   - ☐ The very essence of life is time
   - ☐ it is important
   - ☐ We must not delay
   - ☐ Time is life

10. The writer emphasises two elements in the last paragraph: time and …
    spreading information

Deepen the moment…
Pupils' own responses.

Reading for Productivity Lesson 4 Science Answers:

1. What are the names of the two types of friction.
   Static and Kinetic
2. What is air resistance also known as?
   'Drag'
3. Match the following types of air resistance with their cause:



4. Summarise the meaning and uses of streamlining.

   Various answers. For example- *Adopting a certain shape in order to move quickly and efficiently through air to reduce air resistance.*

5. The text gives some examples of air resistance in everyday life, can you think of any others that you may have noticed?
   Various answers.

6. What is the link between **friction** and **air resistance**?
   Air resistance is a type of friction.
7. What does the term **'air particles'** mean?
   Tiny particles of different solids, liquids and gasses that make up the air around us.
8. Some animals have certain body shapes in order to move **efficiently** through air or water.
   What does the word **efficiently** mean? In a way that achieves maximum productivity with minimum wasted effort or expense.

Deepen the moment...

Pupils own responses, such as: A bird flaps its wings to produce air resistance in order for it to thurst into the air, it continues to flap its wings to build up speed and then streamlines- allowing it to travel at speed. The bird opens its wings to create the largest surface area it can manage, in order to hover in the air and drop slowly and carefully back to the ground. The smaller the bird the faster it can fly. This is because it has a smaller, and therefore more streamlined body shape, whereas the larger birds (with a larger wingspan) are able to hover in the air for longer periods of time due to their larger surface area.

Reading for Productivity Lesson 5 PSHE Answers:

1. Resolution

2. So you could more easily see the steps in conflict resolution.

3. So you can have a framework to solve problems.

4. People should talk calmly and not get angry. They should try to listen and not interrupt.

5. Free expression – pupils own responses.

Deepen the moment...
Pupils' own responses.