



- 1) Complete these calculations.
- a) What is 7 less than -2? **-9**
  - b)  $-5 + 11 = 6$
  - c) What is 12 taken from 5 = **-7**
  - d) Add 8 to -9 = **-1**
  - e)  $-10 + 14 = 4$

2)

I have a -£17 balance in my bank account. I put £15 into my account. What is my new balance?	<b>-£2</b>
My bank account has £35 in it. I spend £49 pounds. What is my new bank account balance?	<b>-£14</b>
I spend £35 on a new bike. The balance in my bank account is now -£18. How much money did I have in my account before I bought the bike?	<b>£17</b>

3)

Town	January	Temperature change	February	Temperature change	March
Twinkl Town	-5°C	+8°C	<b>3°C</b>	+7°C	<b>10°C</b>
Education Avenue	-1°C	<b>-8°C</b>	-9°C	<b>10°C</b>	1°C
Learning Lane	-11.3°C	<b>-6°C</b>	-17.3°C	<b>12.3°C</b>	-5°C



1)

Country	Average Minimum Temperature	Average Maximum Temperature	Average Temperature range
Finland	-20°C	19°C	29°C 39°C
Japan	-2°C	26°C	28°C Correct
Russia	-30.6°C	16.9°C	46.5°C 47.5°C
UK	-1.5°C	17.3°C	18.2°C 18.8°C

- a) *False. The UK has an average temperature range of 18.8°C.*
- b) *False. Japan has an average minimum temperature of -2°C and the UK has an average minimum temperature of -1.5°C. Therefore, the UK's temperature is warmer than Japan's and should be ordered after it. The correct order should be: Russia, Finland, Japan, UK.*
- c) *True. The difference between -30.6°C and 26°C is 56.6°C.*

1) -1°C

2) *Accept any correct number sentences, such as:*



= -10 and = 25 so  $-10 + 25 = 15$   
 = -100 and = 115 so  $-100 + 115 = 15$   
 = -6.25 and = 21.25 so  $-6.25 + 21.25 = 15$

*Accept any answer that identifies that two positive numbers could be added to make 15 but two negative numbers could not be added to make 15.*

# Banknote Reproduction Conditions

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- For all possible reproductions, including modified or distorted reproductions.

Reproduction Conditions		Physical Reproductions	Digital/Other Reproductions
1.	Reproductions must be one sided only.	Required	Not Required
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- 1) Complete these calculations.
- a) What is 7 less than -2?
  - b)  $-5 + 11 =$
  - c) What is 12 taken from 5 =
  - d) Add 8 to  $-9 =$
  - e)  $-10 + 14 =$

2) Solve these money problems.



I have a $-\pounds 17$ balance in my bank account. I put $\pounds 15$ into my account. What is my new balance?	
My bank account has $\pounds 35$ in it. I spend $\pounds 49$ . What is my new bank account balance?	
I spend $\pounds 35$ on a new bike. The balance in my bank account is now $-\pounds 18$ . How much money did I have in my account before I bought the bike?	

3) This table shows how the temperature changed on four different streets around the world. Complete the table to show how the temperatures changed over three months.

Town	January	Temperature change	February	Temperature change	March
Twinkl Town	$-5^{\circ}\text{C}$	$+8^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$+7^{\circ}\text{C}$	___ $^{\circ}\text{C}$
Education Avenue	$-1^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-9^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$1^{\circ}\text{C}$
Learning Lane	$-11.3^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-17.3^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-5^{\circ}\text{C}$





- 1) Oliver has found the minimum and maximum average temperatures for four countries around the world. He has calculated the temperature range for each country. Can you identify his mistakes and correct them?

Country	Average Minimum Temperature	Average Maximum Temperature	Average Temperature range
Finland	-20°C	19°C	29°C
Japan	-2°C	26°C	28°C
Russia	-30.6°C	16.9°C	46.5°C
UK	-1.5°C	17.3°C	18.2°C

Using the table, explain whether the following statements are true or false.

- a) No country has an average temperature range less than 25°C \_\_\_\_\_
- b) If you order the countries by their average minimum temperature, from coldest to warmest, they would be: Russia, Finland, UK and Japan. \_\_\_\_\_
- c) The difference in temperature between the coldest average minimum temperature and the hottest average maximum temperature is less than 60°C. \_\_\_\_\_


Look at the information in the table and make your own true or false statement for a partner. Can they identify whether your statement is true or false?

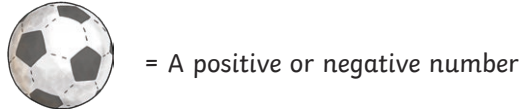
\_\_\_\_\_



- 1) Jai measured the morning temperature of the school playground for one week. On day one, the temperature was  $-6.5^{\circ}\text{C}$ . On day two, the temperature increased by  $5.7^{\circ}\text{C}$ . On day three, it dropped by  $5.3^{\circ}\text{C}$ . On day four, it increased by  $6.9^{\circ}\text{C}$  and on day five, it dropped by  $1.8^{\circ}\text{C}$ .

What was the temperature by the end of day 5? \_\_\_\_\_

- 2)  = A positive or negative number



Investigate finding the possible values  of and  if:

 +  = 15

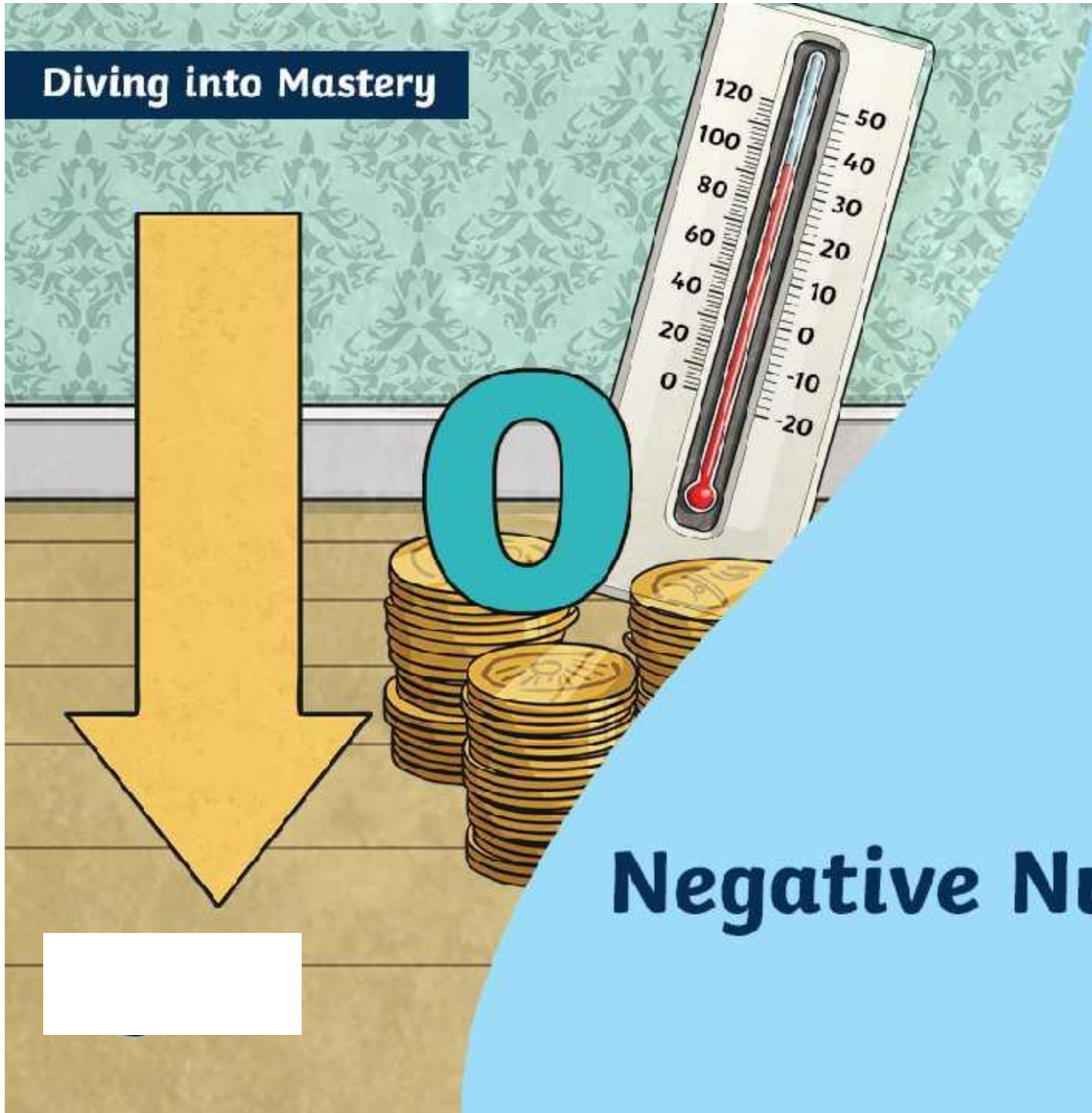
Can you use any decimal numbers to make 15?

\_\_\_\_\_

Is it possible to have two positive or two negative numbers to complete the calculation?

\_\_\_\_\_

**Diving into Mastery**



# Negative Numbers





# Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



**Diving**



**Deeper**



**Deepest**

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.



# Aim

- Use negative numbers in context and calculate intervals across zero.

# Negative Numbers

# Diving



Match the answer to these statements to the correct place on the number line.

What is 12 less than 5?

**-7**

$$-10 + 14 =$$

**4**

What is 17 taken from 7?

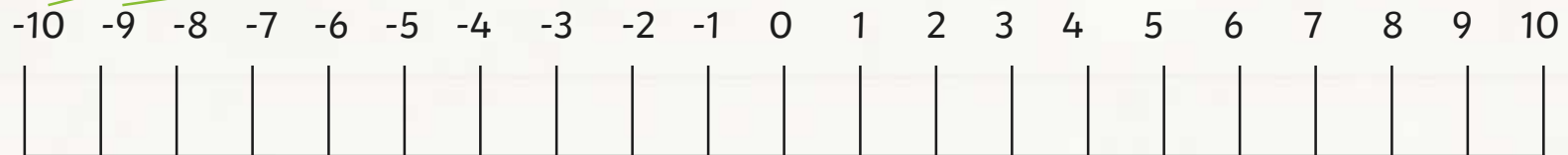
**-10**

$$\text{Add } 9 \text{ to } -8 =$$

**1**

$$2 - 11 =$$

**-9**



## Negative Numbers

## Diving



I have  $-\pounds 26$  in my bank account. I put  $\pounds 35$  into my account. What is my new balance?

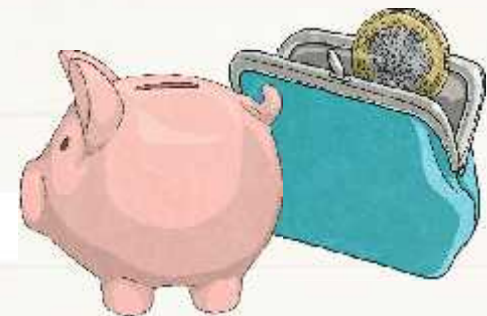
**$\pounds 9$**

My bank account has  $\pounds 9$  in it. I spend  $\pounds 19$ . What is my new bank account balance?

**$-\pounds 10$**

I spend  $\pounds 45$  on a new game. The balance in my bank account is now  $-\pounds 12$ . How much money did I have in my account before I bought the game?

**$\pounds 33$**



## Negative Numbers

## Diving



This table shows how the temperature changed on four different streets around the world. Complete the table to show how the temperatures changed over three months.

Town	October	Temperature change	November	Temperature Change	December
Study Street	13°C	-10°C	3°C	-7°C	-4°C
Reasoning Road	-1°C	+5°C	4°C	-6°C	-2°C
Problem-Solving Place	-5.5°C	+12°C	7.5°C	-19°C	-11.5°C

## Negative Numbers

## Deeper



Miriam has found the minimum and maximum average temperatures for four countries around the world. She has calculated the temperature range for each country.

Can you identify her mistakes and correct them?

Country	Average Minimum Temperature	Average Maximum Temperature	Average Temperature Range
Canada	-29°C	15°C	44°C
China	-12°C	21°C	Correct
Sweden	-16.6°C	17.9°C	34.5°C





## Negative Numbers

## Deeper



Country	Average Minimum Temperature	Average Maximum Temperature	Average Temperature Range
Canada	-29°C	15°C	44°C
China	-12°C	21°C	33°C
Sweden	-16.6°C	17.9°C	34.5°C

Using the table, explain whether the following statements are true or false.

- 1) **True.** From the coldest to warmest temperature, the order would be: Canada (-28.7°C), Sweden (-16.6°C) and China (-11.7°C).
- 2) **False.** The difference between -29°C and 21°C is 50°C. This is greater than 40°C.



## Negative Numbers

## Deepest



An explorer was investigating a deep crater. On day one, she travelled  $-5.6\text{m}$  down the crater. On day two, she travelled a further  $-4.8\text{m}$  down the crater. On day three, she travelled  $6.8\text{m}$  back up the crater to collect some more supplies. On day four, she travelled another  $-9.7\text{m}$  back down the crater. On day five, she travelled all the way back up to the top of the crater to return to the surface.

How far did she need to travel on day five to return to the surface?

**13.3m**





## Negative Numbers

## Deepest



= a positive or negative number



= a positive or negative number

Investigate the possible values of



and



if:



+



= 20

Can you use any decimal numbers to make 20?

**You may have many different answers. For example:**



= -10



= 30

so  $-10 + 30 = 20$



= -5.5

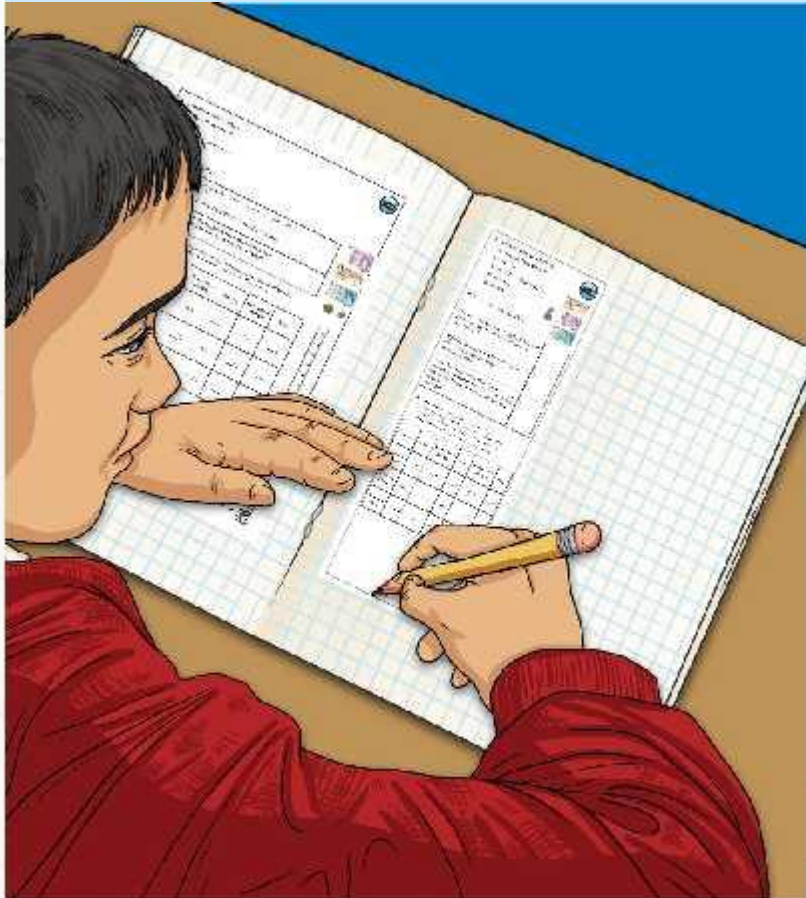


= 25.5

so  $-5.5 + 25.5 = 20$

## Negative Numbers

Dive in by completing your own activity!



9. Give me your temperature in Fahrenheit. I have calculated the lowest temperature. Can you identify the mistake?

Country	Average Winter Temperature
Denmark	-20°
Japan	-2°
Spain	10.0
USA	-4.5°

Using the table, explain what:

- the country is or is not
- if you enter the number for Spain, France, US and J.
- The difference between the lowest average in each of the information in the table and your statement is true

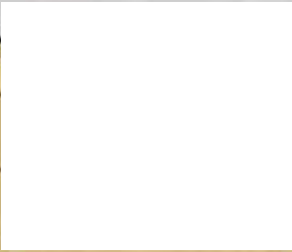
10. Give me your temperature in Fahrenheit. I have calculated the lowest temperature. Can you identify the mistake?

- 20°
- 10°
- 10.0°
- 10.0°
- 10°

11. Give me your temperature in Fahrenheit. I have calculated the lowest temperature. Can you identify the mistake?

12. Give me your temperature in Fahrenheit. I have calculated the lowest temperature. Can you identify the mistake?

Year	Country	Temperature change	Temperature	Temperature change	Max C
2018	USA	+20°	10°	-20°	10°
2019	USA	+20°	10°	-20°	10°
2020	USA	+20°	10°	-20°	10°





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Learning Lane	$-11.3^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-17.3^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-5^{\circ}\text{C}$



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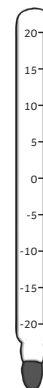


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Learning Lane	$-11.3^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-17.3^{\circ}\text{C}$	___ $^{\circ}\text{C}$	$-5^{\circ}\text{C}$



- 1) Oliver has found the minimum and maximum average temperatures for four countries around the world. He has calculated the temperature range for each country.



Can you identify his mistakes and correct them?

Country	Average Minimum Temperature	Average Maximum Temperature	Average Temperature range
Finland	-20°C	19°C	29°C
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- 2) Using the table, explain whether the following statements are true or false.
- No country has an average temperature range less than 25°C.
  - If you order the countries by their average minimum temperature, from coldest to warmest, they would be: Russia, Finland, UK and Japan.
  - The difference in temperature between the coldest average minimum temperature and the hottest average maximum temperature is less than 60°C.

Look at the information in the table and make your own true or false statement for a partner. Can they identify whether your statement is true or false?

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- 1) Jai measured the morning temperature of the school playground for one week. On day one, the temperature was -6.5°C. On day two, the temperature increased by 5.7°C. On day three, it dropped by 5.3°C. On day four, it increased by 6.9°C and on day five, it dropped by 1.8°C.



What was the temperature by the end of day 5?

2)



= A positive or negative number



= A positive or negative number

Investigate the possible values of and

if + = 15

Can you use any decimal numbers to make 15?

Is it possible to have two positive or two negative numbers to complete the calculation?

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