

Group B – Maths

W/b 18.01.21

MONDAY - Can I mentally solve calculations involving negative numbers?

1) Copy and complete the following calculations.

a) $-2 + 7 =$ b) $-9 + 5 =$ c) $-20 + 14 =$

d) $-2 - -3 =$ e) $7 - -9 =$ f) $-3 - -5 =$

g) $2 + -5 =$ h) $-4 + -6 =$ i) $3 + -7 =$

5	20	-6	1	-3
-4	22	16	-10	-4
2	12	15	36	9

These answers (for both Qs) are in the wrong order. One is an extra answer. Please check your answers carefully and GPL every three questions. Write your own question where the answer is the number that is left over.

2) Calculate the difference between...

a) 10 and -5 b) 6 and -6 c) 0 and -20 d) -7 and -16 e) -4 and -40

Challenge:

A) Jamie is watching his football team's performance in the league. He writes down the move in places in the table each week. His team starts in 2nd place.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
2nd place	-1	+2	0	-3	+1

1. What was his team's highest place?
2. Which week did this happen?
3. In which week did they make the biggest jump up?
4. Where did the team finish after 6 weeks?
5. How many weeks did the team not move?

B) In golf, the lower the score, the better. These are Tim's scores in 8 rounds of golf:

Round 1: -2	Round 5: -5
Round 2: 3	Round 6: 3
Round 3: 4	Round 7: 1
Round 4: 0	Round 8: -2

Answer these questions about Tim's golf game:

1. What was his lowest score?
2. What was his highest score?
3. How much better was his 4th round than his 3rd round?
4. How much better was his 4th round than his 3rd round?
5. Which game showed the best improvement on the previous game?

Optional extra game:

Try this game out with a member of your family. The resources you need to print are on the page. <https://nrich.maths.org/9941>

EXTRA BODMAS CHALLENGE:

a) $2 + (-3) =$

b) $-4 + 3 =$

c) $2 + (-2) - (-3) =$

d) $-4 + (-2) =$

e) $8 - (4 - 6) =$

f) $-5 - 6 + (-2) =$

g) $14 - (-17) + (-9) =$

h) $-6 + (-6) - (-10) =$

i) $-3 - (-19) + (2 - 5) =$

TUESDAY - Can I begin to solve problems involving negative numbers?

- 1) The difference between -6 and another number is 7 . What could the two numbers be?
 - 2) The difference between -15 and another number is 8 . What could the two numbers be?
 - 3) Lauren spent $\pounds 150$, but only had $\pounds 72$ in the bank to start with. How much did she over spend by?
 - 4) With the heating on, Chloe's house had a temperature of 22°C . The heating then broke and the temperature dropped by 25°C . What was the temperature in the house now?
 - 5) Mr and Mrs Smith had $\pounds 2800$ in their bank account. At the end of the month they had to pay three bills. Their telephone bill was $\pounds 110$, their gas bill was $\pounds 315$ and their electricity bill was $\pounds 219.25$. They want to book a holiday which would cost them $\pounds 2599$. Should they book the holiday? Explain why you think this using words and calculations.
- 6)
- 1 Joe has $\pounds 40$ in his bank account on Monday. Work out how much money Joe has in his account after each event described in questions **a** to **d** below. The answer to each question is the balance that Joe has to start with for the next question.
 - a On Tuesday, he spends $\pounds 75$ on a new pair of trainers. What is his balance now?
 - b His mum says he must work to earn the money he owes. So, on Wednesday, he works in a shop and gets paid $\pounds 27$. What is his balance now?
 - c On Thursday, the next door neighbour asks Joe to mow his lawn and pays him $\pounds 10$. What is his balance now?
 - d On Friday, his favourite band releases a new album. It costs $\pounds 8.99$ to download. What will his balance be if he buys it?
 - e Do you think he should download the album now or wait until he earns some more money? Explain your reasons.



7)

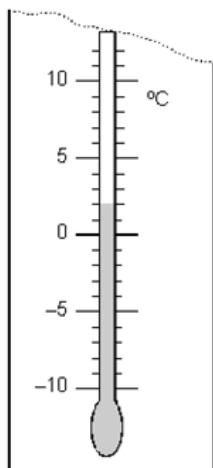
Danny has an overdraft arrangement of £150 with his bank, so his balance can be -£150. Copy Danny's bank statement and fill in the missing balances in the final column.

Date	Payment type and details	Paid out	Paid in	Balance
02 Jan	Balance brought forward			-18.90
05 Jan	Shoe shop	£88.50		<input type="text"/>
11 Jan	Pizza	£10.00		<input type="text"/>
16 Jan	Phone bill	£29.97		<input type="text"/>
30 Jan	Wages		£50.00	<input type="text"/>
31 Jan	Birthday cheque		£45.00	<input type="text"/>
31 Jan	Cinema	£12.00		<input type="text"/>
	Balance carried forward			<input type="text"/>

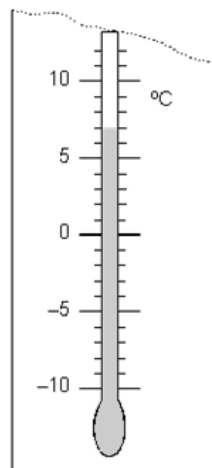
8)

How many degrees **colder** is it in York than in **Rome**?

Q1. These are the temperatures in York and Rome on a day in winter



York



Rome

 °C

On another day, the temperature in York is **4°C**

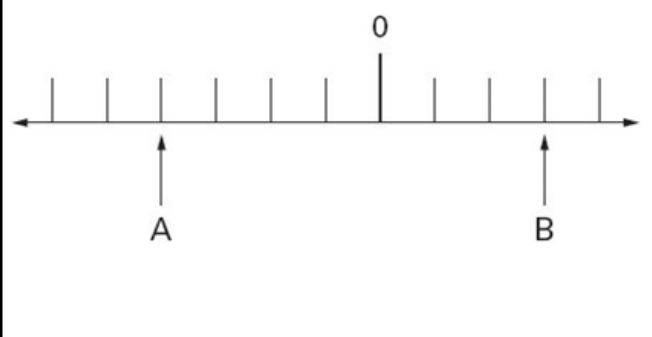
Rome is **7 degrees colder** than York.

What is the temperature in **Rome**?

 °C

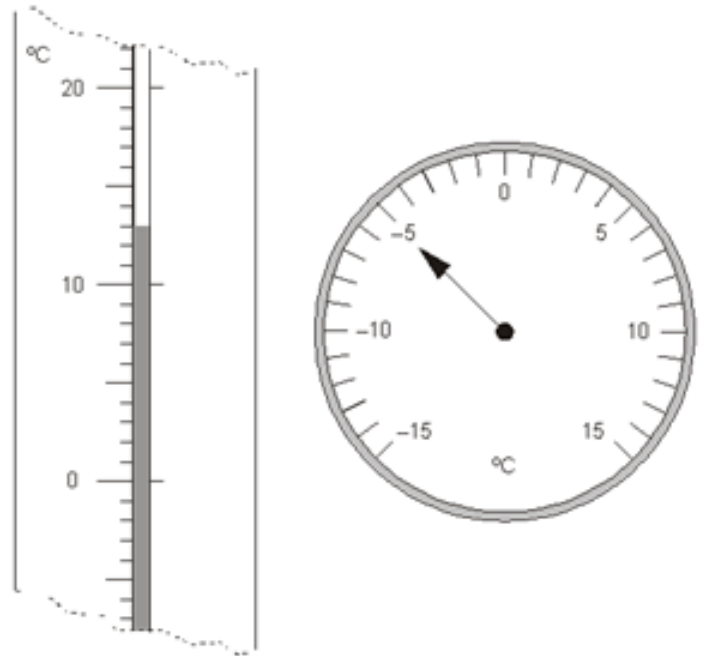
WEDNESDAY - Solve a range of problem solving and reasoning questions involving negative numbers?

Q4. A and B are two numbers on the number line below.



The **difference** between A and B is 140
Write the values of A and B.

Q5. Here are two thermometers.
They show two different temperatures.



What is the difference between the two temperatures?

degrees

Circle **two** numbers with a **difference** of **8**.

[Handwritten mark]

-5 -4 -3 -2 -1 0 1 2 3 4 5

1 mark

Write **two** numbers with a **sum** of **-6**

[Handwritten mark]

1 mark

Mastery

A scientist measures the depth of some objects below the surface of the sea. She records her measurements using negative numbers.

Object	Depth
Coral reef	-2 m
Shipwreck	-11 m
Pirate treasure	four times as deep as the coral reef
Sleeping shark	3 metres above the shipwreck

Which object is deepest? Explain your choice.

Is the sleeping shark deeper than the pirate treasure? Explain your reasoning.

A seagull is hovering 1 m above the surface of the sea. How far apart are the seagull and the coral reef?

Mastery with Greater Depth

A scientist measured the temperature each day for one week at 06:00.

On Sunday the temperature was 1.6°C .

On Monday the temperature had fallen by 3°C .

On Tuesday the temperature had fallen by 2.1°C .

On Wednesday the temperature had risen by 1.6°C .

On Thursday the temperature had risen by 4.2°C .

On Friday the temperature had fallen by 0.9°C .

On Saturday the temperature had risen by 0.2°C .

What was the temperature on Saturday?

Negative Dice



I have two identical dice with the numbers

-1, 2, -3, 4, -5, 6

I roll my two dice and work out the total.

Which of the following totals cannot be achieved?

- a) 3
- b) 7
- c) 8

Thursday - Can I write my own negative number questions using real-life scenarios?

For each of the contexts below, can you write at least two questions which use positive and negative numbers? *Can you include at least three multi-step problems?*

Optional Challenge:

Can you investigate the rule for multiplying and dividing negative and positive numbers?

Can you include multiplication and division in some of your own questions?

In our arithmetic session on Friday, we will share some of these questions with the rest of the group so make sure you have the answers and have checked them too!

TEMPERATURE



Temperature is a physical quantity expressing the subjective perceptions of hot and cold. Therefore, we can have positive temperature (for warm/hot weather) and negative temperature (for cold weather). Temperature is measured with a thermometer (various temperature scales and units of measurement). The most commonly used scales are the Celsius scale ($^{\circ}\text{C}$), the Fahrenheit scale ($^{\circ}\text{F}$), and the Kelvin scale. The lowest theoretical temperature is absolute zero (-273.15°C on the Celsius scale, and -459.67°F on the Fahrenheit scale).

MONEY



Negative numbers are used often in the banking system. One of the most common activity is working out the balance of your bank account each time money goes in or out, especially if it becomes overdrawn (e.g. a **negative balance**). Also, every time someone owes money it can be considered as a negative quantity of money.

SEA LEVEL



Sea level (or mean sea level) is an average level of the surface of one or more of Earth's oceans from which heights such as elevations may be measured. The elevation of a geographic location is its **height above or below** a fixed reference point, most commonly a reference geoid, a mathematical model of the Earth's sea level. Therefore, below the fixed point we have **negative values**.



ELEVATOR/LIFT

An elevator or lift is a type of vertical transportation that moves people or goods between floors (levels, decks) of a building, vessel, or other structure. In some buildings ground floor is considered 0, so going to the basement, parking or other floor **bellow ground floor** is marked with negative numbers (- 1, - 2, - 3).



QUIZZES/GAMES

Different types of games or sports use negative numbers when counting the scores/points. **Losing a game, answering wrong in a quiz** could make you lose points (in this case, the points are considered negative numbers). Moreover, some sports use negative numbers when calculating scores (e.g. golf).

Friday - Can I develop my Arithmetic and Reasoning skills?

Complete the Week 2 Arithmetic Test, which can be found in the Lockdown Home Learning section of the Valley website. Please complete this test before the session on Friday.

WEEKLY OPTIONAL EXTRA CHALLENGE PACK

In the Y6 / Week 3 section of the Lockdown Home Learning on the Valley website, you will find a PDF entitled "*Negative Numbers Stretch and Challenge*". If you would like to challenge yourself further throughout the week, this document has lots of thought-provoking challenges for you to try.

Answers- Monday-Weds

MONDAY

- 1)
a) 5 b) -4 c) -6
d) 1 e) 16 f) 2
g) -3 h) -10 i) -4

- 2)
a) 15 b) 12 c) 20 d) 9 e) 36

Challenge:

- A) 1. 1st 2. 3 & 4 3. 5 4. 3rd 5. 1
B) 1. -5 2. 4 4. 4 5. 5

Extra BODMAS Challenge:

- | | | |
|-------|-------|--------|
| a) -1 | b) -1 | c) 3 |
| d) -6 | e) 10 | f) -13 |
| g) -6 | h) -2 | i) 13 |

TUESDAY

- 1) -6 & 1 or -6 & -15
2) -15 & -23 or -15 & -7
3) -£78
4) -3°C
5) No they do not have enough money as they only have £2155.75 left after they have paid their bills.

Challenge 2 (Joe's Bank account)

- a) £35
b) -£8
c) £2
d) -£6.99
e) He should wait as he does not have enough money in his bank account to afford the album.

7 (Danny)

- 107.40 -117.40 -147.37 -97.37
-52.37 -64.37 -64.37

- 8) 5°C -3 °C

WEDNESDAY

Q4. A = -80 B = 60

Q5. 18 degrees

Circle 2 numbers : -5 & 3 or -4 & 4 or -3 & 5
Two numbers with a sum of -6 : -2 & -4 or -5 & -1

Scientist measures depth below surface of sea

1. Shipwrecks
2. They are at the same depth because $4x-2m = -8m$ and $-11m + 3m = -8m$
3. 3m

Scientist measured temperatures

On Saturday the temperature is 0°C

Negative Dice – b)7