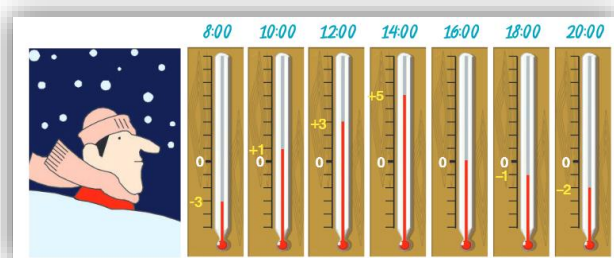
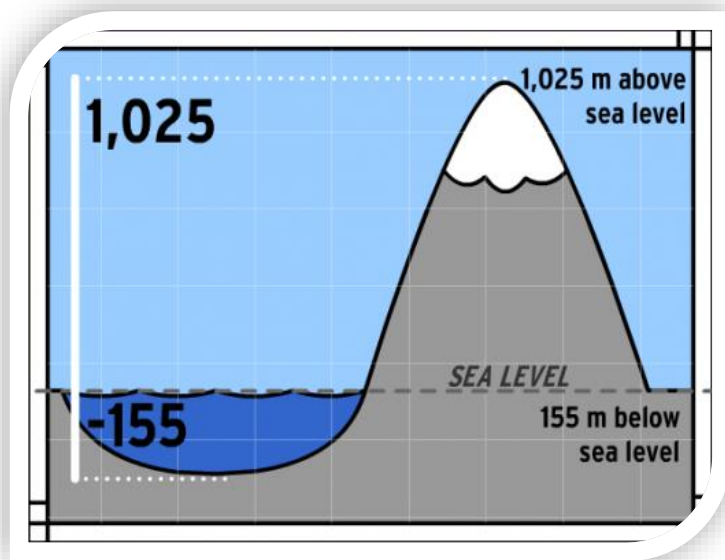


Year 8 - MYP 2

Math

"Directed numbers"



2019-2020

Integers

The negative whole numbers, zero, and the natural numbers form the set of all integers,
 $\dots, -3, -2, -1, 0, 1, 2, 3, \dots$

Zero is neither positive nor negative . We can show these numbers on a number line:



No Sign Means Positive

If a number has **no sign** it usually means that it is a **positive** number.

Example: 5 is really +5

Absolute Value

Absolute value describes the distance of a number on the number line from 0 without considering which direction from zero the number lies. The absolute value of a number is never negative.

Examples

The absolute value of 5 is 5.

distance from 0: 5 units



The absolute value of - 5 is 5.

distance from 0: 5 units



The absolute value of 0 is 0. (Remember that 0 is neither negative nor positive).

Adding and subtracting integers

To add integers having the same sign, keep the same sign and add the absolute value of each number.

To add integers with different signs, keep the sign of the number with the largest absolute value and subtract the smallest absolute value from the largest.

Subtract an integer by adding its opposite.

Multiplying and dividing integers

To multiply or divide integers have in mind the following rules

$+$	\times	$-$	}	$-$
$-$	\times	$+$		
$+$	\div	$-$		
$-$	\div	$+$		
$+$	\times	$+$	}	$+$
$-$	\times	$-$		
$+$	\div	$+$		
$-$	\div	$-$		



Exercises

Part I

1. Circle the biggest number

- a. 2, 7
- b. +2, +1
- c. -5, 2
- d. -10, 0
- e. -125, 4
- f. -125, -10
- g. -2, 2
- h. -4, -3

2. Put these numbers into ascending order (smallest to biggest)

- a. 2, -7, -3, 1
- b. -6, 3, 2, -2, 0
- c. 7, -10, 5, 1, -1
- d. 45, 2, -123, -5, 19, 123
- e. -12, -5, -17, -21, -1, 0

3. Work out the following answers

- | | | |
|---------------|-----------------|-----------------|
| a. $4 - 2 =$ | f. $-6 + 13 =$ | k. $-50 + 30 =$ |
| b. $6 - 9 =$ | g. $-26 + 1 =$ | l. $-20 - 20 =$ |
| c. $+5 - 6 =$ | h. $-60 - 10 =$ | m. $45 - 90 =$ |
| d. $2 - 4 =$ | i. $-1 + 1 =$ | n. $+45 - 9 =$ |
| e. $+2 - 4 =$ | j. $-5 + 7 =$ | o. $+5 - 9 =$ |

4. Work out the following answers

- | | | |
|-----------------------|-----------------------------|----------------------------|
| a. $+5 + 4 - 2 =$ | f. $-6 + 13 - 10 - 2 + 3 =$ | k. $-50 + 30 + 20 =$ |
| b. $6 - 9 - 3 =$ | g. $-26 + 1 + 5 - 3 =$ | l. $-20 - 20 + 10 =$ |
| c. $+5 - 6 + 2 =$ | h. $-60 - 10 + 100 - 30 =$ | m. $45 - 90 - 5 + 3 =$ |
| d. $2 - 4 + 5 - 3 =$ | i. $-1 + 1 + 5 =$ | n. $+45 - 9 - 1 + 5 =$ |
| e. $-2 + 5 + 2 - 4 =$ | j. $-5 + 7 - 8 - 2 =$ | o. $+5 - 9 - 4 + 3 + 10 =$ |

p.

5. Work out the following answers

a. $4 + (-2) =$

f. $(-6) + (+13) =$

k. $(-50) - (+30) =$

b. $(+6) - (+9) =$

g. $-26 + (-1) =$

l. $-20 - (-20) =$

c. $+5 - (+6) =$

h. $-60 - (-10) =$

m. $+45 - (+90) =$

d. $(+2) - 4 =$

i. $(-1) + (+1) =$

n. $(+45) - (+9) =$

e. $(+2) - (+4) =$

j. $(-5) + (-7) =$

o. $(+5) - (+9) =$

6. Work out the following answers

a. $(+5) + (+4) - 2 =$

i. $(-1) + (-1) + (-5) =$

b. $6 + (-9) - (-3) =$

j. $(-5) + (+7) - (-8) - (+2) =$

c. $(+5) - (+6) + (+2) =$

k. $(-50) + (+30) + (-20) =$

d. $(-2) - (+4) + (+5) - (-3) =$

l. $(-20) - (+20) + (-10) =$

e. $-2 + (+5) + (+2) - (-4) =$

m. $(+45) - (-90) - (+5) + (-3) =$

f. $(-6) + (+13) - (+10) - (-2) + (+3) =$

n. $+45 - (+9) - 1 + (-5) =$

g. $(-26) + (-1) + (-5) - (+3) =$

o. $(+5) - 9 - (+4) + (-3) + 10 =$

h. $(-60) - (+10) - (-100) - (+30) =$

Part II

(Directed numbers word problems)

- The temperature is -20°C . If the temperature rises by 15°C what is the new temperature?
- A repairman got on an elevator 3 floors below ground level. The elevator went down 2 floors, went up 16 floors, and then went down 1 floor. Then the repairman got off the elevator. The repairman's assistant is bringing him some spare parts. He gets on the elevator on the 1st floor and he goes down 5 floors to reach the machine room where he takes his tool case. Then he goes up 7 floors, where he gets off the elevator. Is he on the same floor with the repairman? If not, how many floors are they apart? Explain your answer.
- A freezer runs at a temperature of -18°C . It breaks down and the temperature rises 5°C . What is the temperature of the freezer now?

4. The temperature today is 16°C . It is forecast to drop by 12°C . What temperature is it forecast to be?
5. What temperature is 20°C warmer than -10°C ?
6. What temperature is 21°C colder than 39°C ?
7. The official highest recorded temperature is now 56.7°C (134°F), which was measured on 10 July 1913 at Greenland Ranch, Death Valley, California, USA. The official lowest recorded temperature at ground level was -89.2°C (-128.6°F) at the Soviet Vostok Station in Antarctica, on July 21, 1983. What is the difference (range) between the highest and lowest ever recorded.

Part III

1. Find the result

q. $(-2) \times (-3) =$

r. $(-7) \times (-5) =$

s. $(-12) \times (-4) =$

t. $(-9) \times (-25) =$

u. $(-7) \times (-12) =$

v. $(+2) \times (+3) =$

w. $(8) \times (80) =$

x. $(100) \times (+150) =$

y. $(+7) \times (+9) =$

z. $(+2) \times (-6) =$

2. What will the sign be? (positive or negative - circle the correct set)

a. $(-14) \times (-65)$	P (+) (>0)	N (-) (<0)
b. $(-72) \times (-20)$	P (+) (>0)	N (-) (<0)
c. $(-17) \times (-15)$	P (+) (>0)	N (-) (<0)
d. $(-100) \times (-150)$	P (+) (>0)	N (-) (<0)
e. $(-100) \times (-500)$	P (+) (>0)	N (-) (<0)
f. $(+5) \times (+80)$	P (+) (>0)	N (-) (<0)
g. $200 \times (+9)$	P (+) (>0)	N (-) (<0)
h. 3×2	P (+) (>0)	N (-) (<0)
i. $14 \times (+65)$	P (+) (>0)	N (-) (<0)
j. $90 \times (+90)$	P (+) (>0)	N (-) (<0)

3. Find the result

- a. $(-7) \times (+6) =$
- b. $(-10) \times (+2) =$
- c. $(+10) \times (-2) =$
- d. $(+25) \times (-4) =$
- e. $(-100) \times (+8) =$
- f. $(+7) \times (-6) =$
- g. $8 \times (-9) =$
- h. $-9 \times 10 =$
- i. $-25 \times (+4) =$
- j. $-100 \times (+2) =$

4. Find the result

- a. $(-3) \times (-5) \times 0 =$
- b. $(-3) \times (-5) \times 0 + 1 =$
- c. $(+10) \times (-2) \times (-5) \times (-10) =$
- d. $(-2) \times (+4) \times (-1) \times (-5) \times (-10) =$
- e. $(+2) \times (+98) \times (-79) \times (-2) \times (+1) \times 0 =$
- f. $(-2) \times (-2) \times (-5) \times (+2) \times (+10) =$

5. Find the result

- a. $14 \div 2 =$
- b. $(-12) \div 2 =$
- c. $40 \div (-2) =$
- d. $(-100) \div (-2) =$
- e. $-60 \div (-6) =$
- f. $(-15) \div (-5) =$
- g. $(-90) \div 90 =$
- h. $6 \div (-2) =$

6. Fill in the missing numbers.

- a. $\dots \times 5 = -20$
- b. $15 \times \dots = 30$
- c. $\dots \times (-5) = 50$
- d. $-10 \times \dots = 30$
- e. $12 \times \dots = -60$
- f. $(-10) \div \dots = 5$
- g. $-40 \div \dots = -8$
- h. $\dots \div 4 = -25$
- i. $\dots \div \dots = -1$

7. Find the result

- a. $(-6 + 10) \div (-2) =$
- b. $(12 - 24) \div (-2) =$
- c. $[6 + (-2)] \times (-4) =$
- d. $(10 - 2 \times 3) \div (-2) =$
- e. $[8 \times (-2)] - [(-2) \times (-3)] =$
- f. $-14 \div (-2) + (-3) \div 3 \times 10 - (-6) =$