Year 8 – MYP 2

Worksheets

"Christmas Revision Booklet"

2019-2020

Integers

The negative whole numbers, zero, and the natural numbers form the set of all integers,
…. , -3 , -2 , -1 , 0 , 1 , 2 , 3 , ….

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

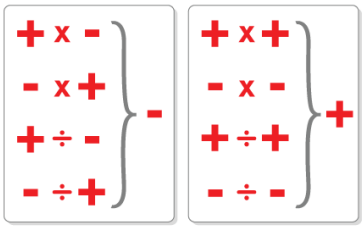
To add integers having the same sign, keep the same sign and add the absolute value of each number.

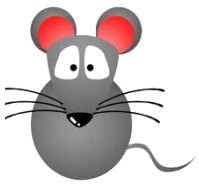
To add integers with different signs, keep the sign of the number with the largest absolute value and subtract the smallest absolute value from the largest.

Subtract an integer by adding it's opposite.

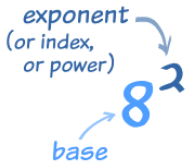
Multiplying and dividing integers

To multiply or divide integers have in mind the following rules





Exponents



The **exponent** of a number says **how many times** to use the number in a multiplication.

In $\mathbf{8^2}$ the "2" says to use 8 twice in a multiplication,
so $\mathbf{8^2 = 8 \times 8 = 64}$

In words: 8^2 could be called "8 to the power 2" or "8 to the second power", or simply "8 squared"

*Exponents are also called **Powers** or **Indices**.*

What if the Exponent is 1, or 0?

If the exponent is 1, then you just have the number itself (example $9^1 = 9$)

If the exponent is 0, then you get 1 (example $9^0 = 1$)

But what about 0^0? It could be either 1 or 0, and so people say it is "indeterminate".

1. Do the operations :
   a. -17 - (-16) =
   b. -2 x (-10) -2 =
   c. - (-2 + 7 - 5) × (-3 + 4) × (-2) =
   d. - (-6 + 8) + (-5 - 7 +12) =
   e. 2 × (-6 + 2 + 4) - 2 × (-5 × 3) =
   f. -14 ÷ 7 + (- 6 + 7) × (-1) - (19 - 25 + 6) =
   g. 9 ÷ 3 × (12 ÷ 4) - (5-3) x 2 =
   h. 30 ÷ 3 + (10 × 3) × (-2) - 18 + 2 × 2 =
   i. -14 + (-20) =
   j. -2 × (-20) =
   k. -5 - (-80) =
   l. -200 - (-90) =
   m. (-3) + (-3) =
   n. (-7) + (-5) =
   o. (-4) - (-3) =
   p. (-8) - (+2) =
   q. -3 × (-2) × 2 - (-5) - (+5) =
   r. (-1) × (+80) × (-2)+(-3) =
   s. (-10) × (-15) × 0 - 10 + (-20) =
   t. (+7) × (+9) × (-1) -5 =

2. A birdwatcher on a cliff saw an eagle 10 meters below him. Earlier, he had spotted the eagle 20 meters below him. Which integer represents the eagle's change in altitude?

3. On a number line, Nina drew a dot at 400. Then, she drew another dot on a number that was 300 units smaller. What number was the new dot on?

4. From 300 feet above sea level, Christina took off in her helicopter and ascended 500 feet. Which integer represents Christina's elevation now?

5. During the second half of a trivia game, Sasha scored 700 points in the news round and -300 points in the philosophy round. What was her score for the second half of the trivia game?

6. It was a very freaky weather day. The temperature started out at 9°C in the morning and went to -13°C at noon. It stayed at that temperature for six hours and then rose 7°C. How far below the freezing point (0°C) was the temperature at 6 p.m.?

7. Do the operations :
   a. $(64 - 2^2) \div (8 - 2)$
   b. $(34 - 2) \div 2 + 2^2$
   c. $(9 - 3)^2 + (18 \div 3)$
   d. $(34 - 2^2) \div (4 - 2)$
   e. $2^3=$
   f. $(-2)^3=$
   g. $3^2+2^3=$
   h. $7^1=$

8. Do the operations :
   a. $28 \div 4 + 2 \times 8 + 2 - 37 =$
   b. $15 + 7 \times 2 - 11 + 35 =$
   c. $75 \div 5 \times 9 - 9 =$
   d. $81 \div 3 - 12 \times 3 + 36 \div 4 =$
   e. $26 \div 2 + 15 \times 4 =$
   f. $42 + 8 - 6 \times 11 + 2 =$
   g. $9 + 4 \times 30 \div 6 + 5 \times 8 =$
   h. $18 \times 2 \div 4 + 52 =$
   i. $58 - (16 \div 4) =$
   j. $(18 + 12) - 27 \div 3 =$
   k. $40 \div (4 \times 2) - 7 =$
   l. $50 \div 2 - (8 \times 9) =$
   m. $90 \div (2 \times 5) + 13 - 34 =$
   n. $5 \times (7 + 11) - 56 \div (2 \times 4) =$
   o. $28 \div (4 + 10) \times (4 + 24) \div 2 =$
   p. $(64 \div 8) + 7 \times 8 + (40 - 38) =$
   q. $125 \div (17 - 12)^2 =$
   r. $96 \div 2^3 - (4 \times 15) =$
   s. $3^3 + (11 \times 7) - 43 =$
   t. $9 \times (72 \div 8) + 2 \times 3^2 =$
   u. $2 \times (63 - 55)^2 + 35 \div 7 =$
   v. $[(4 \times 5) + 9 - 5] \div 6 =$
   w. $3 \times 5 + [(18 \div 6) - 16] + 1 =$
   x. $4 + [(18 + 13) \times 3] \div 3$

9. Which equation(s) is(are) true?

a. $\frac{-2}{15} = -\left(\frac{2}{15}\right)$

b. $-\frac{13}{81} = -\left(\frac{-13}{-81}\right)$

c. $\frac{-2}{-3} = -\left(\frac{2}{-3}\right)$

d. $\frac{3}{-7} = -\frac{3}{7}$

e. $\frac{-1}{3} = -\left(\frac{-1}{-3}\right)$

f. $-\frac{4}{-7} = -\left[-\left(\frac{-4}{-7}\right)\right]$

g. $-\left[-\left(\frac{-2}{3}\right)\right] = \frac{-2}{3}$

10. Do the following operations:

a. $\frac{1}{4} + \frac{1}{8} =$

b. $\frac{1}{4} + \frac{1}{8} - \frac{3}{2} =$

c. $\frac{1}{4} - \frac{1}{8} =$

d. $-\frac{1}{4} \div \frac{1}{8} =$

e. $-\frac{1}{4} + \frac{1}{8} =$

f. $-\frac{1}{5}\ x\ \frac{7}{6} =$

g. $\frac{4}{5}\ x\ \frac{7}{4} =$

h. $-\frac{1}{5} \div (-\frac{5}{6}) =$

11. With which number would you replace $\square$ to make the following statement true?

$2\frac{1}{5} > \frac{\square}{5}$

a. 14
b. 9
c. 12

12. Robin has $3\frac{1}{2}$ chocolates. She wants to share the chocolates with her friends. She gives to as many of her friends as possible $\frac{3}{4}$ of a chocolate. She keeps the rest for herself.

a. To how many friends can he give $\frac{3}{4}$ of a chocolate? Show your work and write your answer in a complete sentence.

b. What fraction of the chocolate will Robin keep for herself? Show your work and write your answer in a complete sentence.

13. Evaluate the following expressions:

a. $3 \times \frac{1}{4} =$

b. $3 \div \frac{1}{4} =$

c. $3 - \frac{1}{4} =$

d. $3 + \frac{1}{4} =$

e. $3 \times 1\frac{1}{4} =$

f. $3 - 1\frac{1}{4} =$

g. $\frac{4}{5} \times \frac{1}{4} =$

h. $3\frac{1}{2} - 2\frac{1}{4} =$

i. $3\frac{1}{8} - 1\frac{3}{4} =$

14. Do the following operations:

a. $2+\frac{4}{23}=$

b. $5\times\frac{2}{7}=$

c. $\frac{2}{4}+\frac{1}{3}+1=$

d. $\frac{1}{2}\times\frac{3}{7}+\frac{7}{2}=$

e. $2\frac{2}{3}+\frac{1}{3}-\frac{1}{6}=$

f. $\frac{\frac{4}{5}}{3}=$

g. $\frac{\frac{2}{3}+4}{4\div\frac{2}{3}}=$

15. Turn the following mixed numbers into improper fractions:

a. $2\frac{1}{2}=$

b. $2\frac{2}{3} =$

c. $1\frac{4}{10} =$

d. $3\frac{7}{8} =$

e. $5\frac{7}{12} =$

f. $3\frac{3}{4} =$

16. Turn the following improper fractions into mixed numbers:

a. $\frac{15}{2} =$

b. $\frac{25}{3} =$

c. $\frac{14}{10} =$

d. $\frac{16}{5} =$

17. Find the reciprocal of each number

a. $\frac{3}{4}$

b. $\frac{7}{8}$

c. $\frac{1}{4}$

d. 2

e. $\frac{11}{8}$

g. $1\frac{1}{2}$

f. $2\frac{1}{3}$

h. 11

18. Choose (circle) the **best** option that represents the number:

a. 37%

i. $\frac{37}{100}$

ii. 0.037

iii. $\frac{37}{10}$

iv. $\frac{3}{5}$

19.

a. Does the expression (-6) + (-10) result in a positive or negative integer?
b. Does the expression (-4)-(16) result in a positive or negative integer?
c. Does the expression -(-4)-(-16)+(-16) result in a positive or negative integer?
d. Does the expression (3)+(-5)-(-3) ×2 result in a positive or negative integer?
e. Does the expression (-2)×(+3) ×(-1)×(-5) result in positive or negative integer?
f. Does the expression -1×(-5)×(-2)×0×(+5) result in positive or negative integer?

20. Fill in the blanks using the given operators in each problem