IDT-PRE-Mo3-T1 Quiz: Whole Numbers and Integers - Compare and Order Integers

1. Evaluate the expression |−7|. (1 point - Remedial)
A. -7
B. 7
C. 70
D. 0

Answer: B. 7
- **Step 1: Understand Absolute Value** The absolute value of a number is its distance from zero on a number line. Distance is always a positive value.
- **Step 2: Find the Distance** The number -7 is 7 units away from 0 on the number line.
- **Step 3: State the Answer** Therefore, the absolute value of -7 is 7.

2. Evaluate the expression |−2|. (1 point - Remedial)
F. 2
G. -2
H. 0
J. 20

Answer: F. 2
- **Step 1: Understand Absolute Value** The absolute value of a number is its distance from zero.
- **Step 2: Find the Distance** The number -2 is 2 units away from zero.
- **Step 3: State the Answer** The absolute value of -2 is 2.

3. Choose the symbol to replace ☐ to make the sentence 3☐−12 true. (1 point - Remedial)
A. <
B. =
C. >
D. +
Answer: C. >
- **Step 1: Identify the Types of Numbers** The problem compares a positive integer (3) and a negative integer (-12).
- **Step 2: Apply the Number Line Rule** On a number line, any positive number is always to the right of any negative number.
- **Step 3: Conclude the Comparison** Since numbers on the right are always greater, 3 is greater than -12.

4. Choose the set of numbers that is correctly ordered from least to greatest. (1 point - Remedial)
F. {-8, 7, -4, 1}
G. {-7, 5, -1, -2}
H. {-5, -3, 1, -6}
J. {-4, -2, 1, 3}

Answer: J. {-4, -2, 1, 3}
- **Step 1: Analyze Option J** Look at the set {-4, -2, 1, 3}.
- **Step 2: Order the Negative Numbers** -4 is to the left of -2 on a number line, so -4 is less than -2. This part is correct.
- **Step 3: Order the Positive Numbers** 1 is to the left of 3 on a number line, so 1 is less than 3. This part is also correct.
- **Step 4: Check the Full Order** The negative numbers come before the positive numbers. The complete order {-4, -2, 1, 3} is correct from least to greatest.

5. Find the sum 5+(−6). (1 point - Remedial)
A. 11
B. -1

C. 1
D. -11

Answer: B. -1

- **Step 1: Identify the Signs** This is an addition problem with integers of different signs.
- **Step 2: Find the Difference of Absolute Values** Find the difference between their absolute values: $|-6|-|5| = 6-5=1$.
- **Step 3: Determine the Sign** The number with the greater absolute value is -6, so the result is negative. The answer is -1.

6. Find the product $-4 \cdot 3$. (1 point - Remedial)
A. 7
B. 12
C. -12
D. -7

Answer: C. -12

- **Step 1: Multiply the Absolute Values** Multiply the absolute values of the numbers: 4 x 3 = 12.
- **Step 2: Determine the Sign** The product of two integers with different signs is negative.
- **Step 3: State the Final Answer** The answer is -12.

7. Evaluate the expression $|28|-|-6|$. (2 points - On-Level)
A. 22
B. 34
C. -22
D. -34

Answer: A. 22

- **Step 1: Evaluate the First Absolute Value** The absolute value of 28 is 28. So, |28|[citestart]=28.
- **Step 2: Evaluate the Second Absolute Value** The absolute value of -6 is 6. So, |−6|[citestart]=6.
- **Step 3: Subtract the Results** Subtract the second value from the first: 28 - 6 = 22.

8. Find the difference $12-22$. (2 points - On-Level)
A. -10
B. 34
C. 10
D. -34

Answer: A. -10

- **Step 1: Rewrite as Addition** To subtract an integer, add its opposite. The opposite of 22 is -22. The problem becomes 12 + (-22).
- **Step 2: Find the Difference of Absolute Values** Find the difference between their absolute values: $|-22|-|12|=22-12=10$.
- **Step 3: Determine the Sign** The number with the greater absolute value is -22, so the result is negative. The answer is -10.

9. Find the quotient $-15 \div (-5)$. (2 points - On-Level)
F. -3
G. 75
H. 3
J. -20

Answer: H. 3

- **Step 1: Divide the Absolute Values** Divide the absolute values of the numbers: 15 ÷ 5 = 3.

- **Step 2: Determine the Sign** The quotient of two integers with the same sign is positive.
- **Step 3: State the Final Answer** The answer is 3.

10. Evaluate the expression $|a+c|+b$ if $a=-1$, $b=2$, and $c=-8$. (3 points - Extended)
A. -15
B. 15
C. -3
D. 11

Answer: D. 11

- **Step 1: Substitute the values** Replace the variables in the expression with their given numbers.
  $|(-1)+(-8)|+2$
- **Step 2: Perform the operation inside the absolute value bars first** + Add the integers inside the bars: -1 + (-8) = -9.
  $|-9|+2$
- **Step 3: Evaluate the absolute value** Find the distance of -9 from zero, which is 9.
  $9+2$

Step 4: Perform the final addition Add the remaining numbers: 9 + 2 = 11.

IDT-ETH-Mo1-T1 Quiz: What is Science Inquiry?

1. A measurement, an observation, or a statement that can be strictly defined is... (1 point - Remedial)

A. a fact.
B. an opinion.
C. a prediction.

Answer: A. a fact.
- **Step 1: Analyze the question.** The question asks for a term that describes something verifiable, like a measurement.
- **Step 2: Evaluate the options.** An opinion is a belief (e.g., "blue is the best color"), and a prediction is a guess about the future. A fact is a statement that can be proven true, which matches the description.

2. Which activity is usually NOT the first step of scientific inquiry? (1 point - Remedial)

A. asking a question
B. gathering information
C. communicating results

Answer: C. communicating results
- **Step 1: Recall the steps of scientific inquiry.** The process usually begins with making observations and asking questions.
- **Step 2: Evaluate the options.** Asking a question and gathering information happen early in the process. Communicating results is what a scientist does after an investigation is complete.
- **Step 3: Conclude that communicating results is not a first step.** [8888]

3. Which tool would a scientist use to measure mass? (1 point - Remedial)

A. thermometer
B. graduated cylinder
C. triple-beam balance

Answer: C. triple-beam balance
- **Step 1: Understand the quantity being measured.** Mass is the amount of matter in an object.
- **Step 2: Identify the function of each tool.** A thermometer measures temperature, and a graduated cylinder measures the volume of a liquid. A triple-beam balance is specifically designed to measure mass.

4. A scientist who works in the field of biology would most likely study... (1 point - Remedial)

A. forces.
B. animals.
C. volcanoes.

Answer: B. animals.
- **Step 1: Define the branches of science.** Life science (biology) is the study of living things. Earth science includes the study of volcanoes, and physical science includes the study of forces.
- **Step 2: Categorize the options.** Animals are living things and would be studied in biology.

5. Which of these is NOT a fact? (1 point - Remedial)

A. an observation
B. a measurement
C. a personal view

Answer: C. a personal view
- **Step 1: Define a fact.** A fact is a statement, observation, or measurement that can be proven to be true.
- **Step 2: Define a personal view.** A personal view, or opinion, is a belief or feeling that cannot be proven true or false.
- **Step 3: Compare the terms.** Observations and measurements are verifiable facts, while a personal view is an opinion.

6. A rule that describes a pattern in nature is a... (1 point - Remedial)

A. scientific law.
B. scientific theory.
C. scientific investigation.

Answer: A. scientific law.
- **Step 1: Differentiate between a law and a theory.** A scientific law describes a pattern but does not explain why it happens. A scientific theory is a well-supported explanation of why it happens.
- **Step 2: Apply the definition.** The question asks for a term that "describes a pattern," which is the definition of a scientific law.

7. An explanation based on many observations and investigations is a... (2 points - On-Level)

A. scientific law.
B. scientific theory.
C. scientific hypothesis.

Answer: B. scientific theory.
- **Step 1: Analyze the key phrase.** The question describes an "explanation based on many observations.
- **Step 2: Compare the options.** A hypothesis is a *possible* explanation that is not yet well-tested. A scientific law *describes* a pattern but does not explain it. A scientific theory is the only term for a broad explanation that has been repeatedly tested and supported.

8. Which statement about scientific laws is correct? (2 points - On-Level)

A. Scientific laws are hypotheses.
B. Scientific laws describe patterns in nature.
C. Scientific laws explain why something happens.
D. Scientific laws are the same as scientific theories.

Answer: B. Scientific laws describe patterns in nature.
- **Step 1: Define a scientific law.** A scientific law is a rule that describes a repeatable pattern in nature. It tells you *what* will happen under certain conditions.
- **Step 2: Evaluate the other options.** A law is not a hypothesis, which is a testable but unproven idea. A law does not explain "why" something happens; that is the role of a theory. Therefore, laws and theories are not the same.

9. Physical science includes... (2 points - On-Level)

A. physics and biology.
B. biology and geology.
C. chemistry and physics.
D. oceanography and chemistry.

Answer: C. chemistry and physics.
- **Step 1: Identify the main branches of science.** The three main branches are Earth science, life science, and physical science.
- **Step 2: Define physical science.** Physical science is the study of matter and energy.
- **Step 3: Categorize the subjects.** Physics and chemistry are the two primary fields within physical science. Biology is a life science, and geology and oceanography are Earth sciences.

10. Which statement contains a fact and an opinion? (3 points - Extended)

A. The weather is nice today, but I like rainy days best.
B. The wind speed is 30 km/h, so it would be fun to fly a kite.
C. The wind speed is increasing, and the temperature is falling.
D. One centimeter of rain fell today, and the temperature was 17◦C.

Answer: B. The wind speed is 30 km/h, so it would be fun to fly a kite.

- **Step 1: Understand the difference between a fact and an opinion.** A fact can be measured or verified (e.g., a wind speed measurement). An opinion is a personal belief or feeling that cannot be proven (e.g., whether something is "fun").
- **Step 2: Analyze each statement.**
  - A: "The weather is nice" and "I like rainy days best" are both opinions.
  - B: "The wind speed is 30 km/h" is a verifiable fact. [43] "It would be fun to fly a kite" is an opinion. This statement contains both.
  - C: Both parts of this statement are measurable facts.
  - D: Both parts of this statement are measurable facts.
- **Step 3: Conclude that statement B is the only one that contains both a verifiable fact and a personal opinion.**