

**IDT-PRE-Mo3-T1 Test Question Bank: Whole Numbers and Integers - Compare and Order Integers**

**Multiple Choice**

1. Evaluate the expression  $|-7|$ .

- A. -7
- B. 7
- C. 70
- D. 0

2. Evaluate the expression  $|-2|$ .

- F. 2
- G. -2
- H. 0
- J. 20

3. Evaluate the expression  $|28| - |-6|$ .

- A. 22
- B. 34
- C. -22
- D. -34

4. Choose the symbol to replace  $\square$  to make the sentence  $-9\square-4$  true.

- F. <
- G. =
- H. >
- J. +

5. Choose the symbol to replace  $\square$  to make the sentence  $3\square-12$  true.

- A. <
- B. =
- C. >
- D. +

6. Choose the set of numbers that is correctly ordered from least to greatest.

- F.  $\{-8, 7, -4, 1\}$
- G.  $\{-7, 5, -1, -2\}$
- H.  $\{-5, -3, 1, -6\}$
- J.  $\{-4, -2, 1, 3\}$

7. Find the sum  $5+(-6)$ .

- A. 11
- B. -1
- C. 1
- D. -11

8. Find the difference  $12-22$ .

- A. -10
- B. 34
- C. 10
- D. -34

9. Find the product  $-4\cdot 3$ .

- A. 7
- B. 12
- C. -12
- D. -7

10. Find the quotient  $-15\div(-5)$ .

- F. -3
- G. 75
- H. 3
- J. -20

### Equations

11. Evaluate  $|-13|$ .

12. Evaluate  $|17|-|-9|$ .

13. Evaluate  $|-6|+|-9|$ .

14. Evaluate  $7+(-20)$ .

15. Find the difference  $-27-16$ .

16. Find the difference  $45-(-12)$ .

17. Find the product  $(-3)(-54)$ .

18. Simplify the expression  $-8t \cdot 3r$ .

### Word Problems

19. A helicopter ascended 220 meters to an altitude of 300 meters. Find the original altitude.

20. The winter low temperature in Frosty City was  $-18^{\circ}\text{F}$ . The summer high temperature was  $86^{\circ}\text{F}$ . Find the difference between the temperatures.

### Answers

1. B. 7

- **Step 1:** Understand absolute value. The absolute value of a number is its distance from zero on a number line, which is always positive.
- **Step 2:** Determine the distance.  $-7$  is 7 units away from zero.
- **Step 3:** The absolute value is 7.

2. F. 2

- **Step 1:** Understand absolute value. The absolute value of a number is its distance from zero.
- **Step 2:** Determine the distance.  $-2$  is 2 units away from zero.
- **Step 3:** The absolute value is 2.

3. A. 22

- **Step 1:** Evaluate the first absolute value.  $|28|=28$ .
- **Step 2:** Evaluate the second absolute value.  $|-6|=6$ .
- **Step 3:** Subtract the second value from the first:  $28 - 6 = 22$ .

4. F.  $<$

- **Step 1:** Locate  $-9$  and  $-4$  on a number line.
- **Step 2:** Observe their positions.  $-9$  is to the left of  $-4$ .
- **Step 3:** The number on the left is always less than the number on the right. Therefore,  $-9 < -4$ .

5. C.  $>$

- **Step 1:** Locate 3 and  $-12$  on a number line.
- **Step 2:** Observe their positions. 3 is to the right of  $-12$ .
- **Step 3:** A positive number is always greater than a negative number. Therefore,  $3 > -12$ .

6. J. {-4, -2, 1, 3}

- **Step 1:** Order the negative numbers from least to greatest. -4 is less than -2.
- **Step 2:** Order the positive numbers from least to greatest. 1 is less than 3.
- **Step 3:** Combine the ordered lists, with negative numbers first. The correct order is -4, -2, 1, 3.

7. B. -1

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

8. A. -10

- **Step 1:** To subtract an integer, add its opposite. The opposite of 22 is -22.
- **Step 2:** Rewrite the problem as an addition:  $12 + (-22)$ .
- **Step 3:** Find the difference of their absolute values:  $|-22| - |12| = 22 - 12 = 10$ .
- **Step 4:** The number with the greater absolute value is -22, so the result is negative. The answer is -10.

9. C. -12

- **Step 1:** Multiply the absolute values of the numbers:  $4 \times 3 = 12$ .
- **Step 2:** Determine the sign of the product. A negative number multiplied by a positive number results in a negative product.
- **Step 3:** The answer is -12.

10. H. 3

- **Step 1:** Divide the absolute values of the numbers:  $15 \div 5 = 3$ .
- **Step 2:** Determine the sign of the quotient. A negative number divided by a negative number results in a positive quotient.
- **Step 3:** The answer is 3.

11. 13

- **Step 1:** The absolute value is a number's distance from zero.
- **Step 2:** -13 is 13 units from zero. So,  $|-13| = 13$ .

12. 8

- **Step 1:** Evaluate the first absolute value:  $|17| = 17$ .
- **Step 2:** Evaluate the second absolute value:  $|-9| = 9$ .
- **Step 3:** Subtract the results:  $17 - 9 = 8$ .

13. 15

- **Step 1:** Evaluate the first absolute value:  $|-6| = 6$ .
- **Step 2:** Evaluate the second absolute value:  $|-9| = 9$ .

- **Step 3:** Add the results:  $6 + 9 = 15$ .

#### 14. -13

- **Step 1:** Add two integers with different signs by subtracting their absolute values:  $|-20| - |7| = 20 - 7 = 13$ .
- **Step 2:** Give the result the same sign as the integer with the greater absolute value (-20). The result is -13.

#### 15. -43

- **Step 1:** To subtract an integer, add its opposite. The problem becomes  $-27 + (-16)$ .
- **Step 2:** To add integers with the same sign, add their absolute values:  $27 + 16 = 43$ .
- **Step 3:** Keep the same sign. The result is -43.

#### 16. 57

- **Step 1:** To subtract an integer, add its opposite. The opposite of -12 is 12.
- **Step 2:** Rewrite the problem as an addition:  $45 + 12$ .
- **Step 3:** Add the numbers:  $45 + 12 = 57$ .

#### 17. 162

- **Step 1:** Multiply the absolute values of the numbers:  $3 \times 54 = 162$ .
- **Step 2:** Determine the sign. The product of two negative integers is positive.
- **Step 3:** The answer is 162.

#### 18. -24rt

- **Step 1:** Multiply the integers:  $-8 \times 3 = -24$ .
- **Step 2:** Multiply the variables:  $t \times r = rt$ .
- **Step 3:** Combine the parts:  $-24rt$ .

#### 19. 80 meters

- **Step 1:** Let the original altitude be 'x'. The helicopter ascended (added) 220 meters to reach a final altitude of 300 meters.
- **Step 2:** Set up the equation:  $x + 220 = 300$ .
- **Step 3:** Solve for x by subtracting 220 from both sides:  $300 - 220 = 80$ .
- **Step 4:** The original altitude was 80 meters.

#### 20. 104°F

- **Step 1:** To find the difference between a positive and a negative temperature, subtract the lower temperature from the higher one.
- **Step 2:** Set up the expression:  $86 - (-18)$ .
- **Step 3:** To subtract a negative integer, add its opposite:  $86 + 18$ .
- **Step 4:** Calculate the sum:  $86 + 18 = 104$ . The difference is 104°F.

## IDT-ETH-Mo1-T1 Test Question Bank: What is Science Inquiry?

### Multiple Choice

**Directions:** Choose the correct answer. Only one correct choice per question.

1. A measurement, an observation, or a statement that can be strictly defined is...

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

2. Which activity is usually NOT the first step of scientific inquiry?

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

3. Which tool would a scientist use to measure mass?

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

4. A scientist who works in the field of biology would most likely study...

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

5. An explanation based on many observations and investigations is a...

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

6. A rule that describes a pattern in nature is a...

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

7. Physical science includes...

- A. physics and biology.

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

8. Which statement about scientific laws is correct?

- 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.

9. Which grouping includes only tools used to measure?

- A. compass, anemometer, wind vane
- B. wind vane, binoculars, meterstick
- C. anemometer, thermometer, meterstick
- D. graduated cylinder, triple-beam balance, streak plate

10. Which statement contains a fact and an opinion?

- 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

### Matching

**Directions:** Match the term with the correct definition. Each term is used only once.

<b>Term</b>	<b>Definition</b>
11. Inference	A. the act of using one or more of your senses to gather information
12. Observation	B. a logical explanation of an observation that is drawn from prior knowledge
13. Prediction	C. a statement about what will happen next in a sequence of events
14. Hypothesis	D. a possible explanation of an observation that can be tested

### True or False

**Directions:** Determine if the statement is true or false.

- 15. A scientific law is the same as a scientific theory.
- 16. A scientific law only states that an event occurs.
- 17. The study of Earth's rocks, soil, oceans, atmosphere, and surface features is Earth science.
- 18. Earth science is the most useful branch of science.

## Short Answer

19. Identify one reason why it is important for scientists to use the International System of Units.

20. Using a ruler marked in centimeters, you determine that a paper clip is 3.4 cm long. State which of the two digits in the measurement you know with less certainty and explain why.

## Answers

1. A. a fact.

A fact is a statement that can be proven true, such as a measurement or an observation. An opinion is a belief, and a prediction is a statement about the future.

2. C. communicating results.

Communicating results is typically the last step in a scientific investigation. Asking a question and gathering information are initial steps.

3. C. triple-beam balance.

A triple-beam balance is used to measure mass. A thermometer measures temperature, and a graduated cylinder measures volume.

4. B. animals.

Biology is the study of living things, such as animals. Forces are studied in physics, and volcanoes are studied in geology.

5. B. scientific theory.

A scientific theory is a well-supported explanation for a wide range of observations and experimental results. A scientific law describes a pattern, and a hypothesis is a testable explanation.

6. A. scientific law.

A scientific law is a statement that describes an observed pattern in nature without attempting to explain it. A theory explains why the pattern exists.

7. C. chemistry and physics.

Physical science is the study of matter and energy, which includes chemistry and physics. Biology is a life science. Oceanography is an Earth science.

8. B. Scientific laws describe patterns in nature.

A scientific law summarizes an observed pattern but does not explain it. A theory explains the pattern, and a hypothesis is a proposed explanation that can be tested.

9. C. anemometer, thermometer, meterstick.

An anemometer measures wind speed, a thermometer measures temperature, and a meterstick measures length. A compass and wind vane indicate direction, binoculars are for observation, and a streak plate is for identifying minerals.

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

"The wind speed is 30 km/h" is a verifiable fact. "It would be fun to fly a kite" is an opinion.

11. B. a logical explanation of an observation that is drawn from prior knowledge.

An inference uses prior knowledge to explain an observation.

12. A. the act of using one or more of your senses to gather information.

An observation is the gathering of information directly through the senses.

13. C. a statement about what will happen next in a sequence of events.

A prediction forecasts a future event based on a pattern or hypothesis.

14. D. a possible explanation of an observation that can be tested.

A hypothesis is a testable statement that can be investigated.

**15. False.** A scientific law describes a pattern in nature, while a scientific theory is an explanation of why that pattern exists. They are not the same.

16. True.

A scientific law states that a specific event or pattern will occur under certain conditions but does not explain the underlying reasons.

17. True.

This is the definition of Earth science, which is one of the main branches of science.

18. False.

Stating that one branch of science is "most useful" is an opinion, as usefulness is subjective and depends on context.

**19.** It is important for scientists to use the International System of Units (SI) because it provides a universal standard of measurement. This allows scientists from different countries to easily communicate, share, and compare their data and results without confusion or the need for conversions, which helps ensure that experiments can be replicated and verified globally.

**20.** The digit known with less certainty is the **4** (in the tenths place). The ruler is marked in centimeters, so the "3" can be read with certainty. However, the digit "4" is an estimation of the paper clip's length between the 3 cm and 4 cm marks, making it less certain.