(1) $3x - 17 = 2x + 4$

(A) Conditional

(B) Identity

(C) Contradiction

$3x - 17 = 2x + 4$

$x - 17 = 4$

$x = 21$

This is a conditional because it only has only solution.

(2) $6y + 9 = 6(y + 5) - 21$

(A) Conditional

(B) Identity

(C) Contradiction

$6y + 9 = 6(y + 5) - 21$

$6y + 9 = 6y + 30 - 21$

$6y + 9 = 6y + 9$

This is an identity because both sides of the equation are exactly the same.

So the solution set is all real numbers.
(5) \(3x - 4 = 2(x+2) + x\).

(A) Conditional
(B) Identity
\(\checkmark\) (C) Contradiction.

\[3x - 4 = 2(x+2) + x\]
\[3x - 4 = 2x + 4 + x\]
\[3x - 4 = 3x + 4\]
\[-4 = 4\]

This is a contradiction because the above statement is never true.
The solution set is the empty set.

(4) \(\frac{5z-3}{3} + \frac{11}{6} = \frac{10z+1}{6}\).

(1) Least common multiple = 6
(2) Multiply every term by LCM

\[6 \cdot \frac{5z-3}{8} + \frac{6 \cdot 11}{8} = \frac{8}{1} \cdot \frac{10z+1}{8}\]

\[2(5z-3) + 11 = 10z + 1\]
\[10z - 6 + 11 = 10z + 1\]
\[10z + 5 = 10z + 1\]
\[5 = 1\]

So no solution. This is a contradiction.

(5) \(|2z+5| - 2z = 0\).

(1) Isolate the absolute value.
(2) Set up two equations

| 2z + 5 | = 2z
\[2z + 5 = 25\text{ or } 2z + 5 = -25\]
\[2z = 20\text{ or } 2z = -30\]
\[z = 10\text{ or } z = -15\]
(6) \( |10y+1| + 7 = 2 \)
\[ |10y + 1| = -5 \]
Since the absolute value cannot be negative, this equation has no solution.

(7) \( |3x+5| = |x-1| \)

1. \[ 3x + 5 = x - 1 \]
   \[
   2x + 5 = -1 \\
   2x = -6 \\
   x = -3
   \]
   \[ x = -3 \text{ or } -1 \]
   (Check by substituting it back into the original equation.)

2. \[ 3x + 5 = -(x - 1) \]
   \[
   3x + 5 = -x + 1. \\
   4x + 5 = 1. \\
   4x = -4 \\
   x = -1.
   \]

(8) Change 40°C to °F, provided that \( F = \frac{9}{5}C + 32 \).

\[ F = \frac{9}{5} (40) + 32 \]
\[ = 162 + 32 \]
\[ = 194. \]

(9) Sum of three consecutive integers is 228. Find the largest of the three.

\[ \frac{228}{3} = 76 \text{ (this is the middle value (average))} \]

The largest is \( 76 + 1 = 77 \), smallest is \( 76 - 1 = 75 \).

(10) \(-8 < 3y - 2 \leq 25.\)

\[-6 < 3y \leq 27 \]
\[-2 < y \leq 9 \]
Express with interval notation.

\([-2, 9]\)
(11) \(4 \mid x + 2 \mid > 20\).
   \[\mid x + 2 \mid \geq 5\]
   \[x + 2 \geq 5 \quad \text{or} \quad x + 2 \leq -5\]
   \[x \geq 3 \quad \text{or} \quad x \leq -7\].

\[\begin{array}{c}
\text{Interval:} \\
(-\infty, -7] \cup [3, \infty)
\end{array}\]

(12) \(9 \mid 3-x \mid \leq -36\)
   \[\mid 3-x \mid \leq -4\].
   Absolute values are never negative, so NO SOLUTIONS.

(13) \(\frac{26}{6} < \frac{y+8}{3} < \frac{35}{6}\)

\[
\frac{26}{6} < \frac{y+8}{3} < \frac{35}{6}
\]

\[
26 < 2(y+8) < 35
\]

\[
13 < y+8 < \frac{35}{2}
\]

\[
5 < y < 9.5 \quad (5 < y < \frac{19}{2})
\]

(14) Distance between \((7, -1)\) and \((4, 3)\)

\[d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}\]

\[
= \sqrt{(3 - (-1))^2 + (4 - 7)^2}
\]

\[
= \sqrt{(4)^2 + (-3)^2}
\]

\[
= \sqrt{16 + 9}
\]

\[
= \sqrt{25}
\]

\[
= 5
\]
(15) Which quadrant is (0, -3) in?

None.

It's on the y-axis.

(16) Is this a right triangle?

Always pick the longest side to be the potential hypotenuse.

\[4.8^2 + 6.4^2 = 23.04 + 40.96 = 64\]

\[8^2 = 64\]

So it is a right triangle.

(17) Find the missing value. \(x\)

\[x^2 + 13.5^2 = 35.1^2\]

\[x^2 + 182.25 = 1232.01\]

\[x^2 = 1049.76\]

\[x = \sqrt{1049.76} = 32.4\]