1. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{25600}{400}} = \sqrt{64} = 8$$

NATURAL NUMBER
WHOLE NUMBER
⋮

A. Integer

B. Irrational

C. Not a Real number

D. Whole

E. Rational

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2. Simplify the expression below and choose the interval the simplification is contained within.

PEMA

$$4 - 14 \div 2 * 8 - (10 * 13)$$

PARENTHESES

$\boxed{-182}$

$= 4 - 14 \div 2 * 8 - 130$

MULTIPLICATION/DIVISION

$= 4 - 7 * 8 - 130$

MULTIPLICATION/DIVISION

$= 4 - 56 - 130$

ADDITION/SUBTRACTION

$= -182$

A. $[-811, -805]$

B. $[-133, -126]$

C. $[132, 140]$

D. $[-184, -175]$

E. $[647, 657]$

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3. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\frac{0}{-14\pi} + 9i = 0 + 9i = 9i$$

PURE IMAGINARY

A. Nonreal Complex

B. Not a Complex Number

C. Rational

D. Irrational

E. Pure Imaginary

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4. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(10 - 2i)(-9 - 7i)$$

$a = \boxed{-104}$ $b = \boxed{-52}$

$= 10(-9) + 10(-7i) + (-2i)(-9) + (-2i)(-7i)$

$= -90 - 70i + 18i + 14i^2$

$= -90 + (-70 + 18)i + 14(-1)$

$= -90 - 52i - 14$

$= -104 - 52i$

A. $a \in [-92, -87]$ and $b \in [7, 15]$

B. $a \in [-83, -73]$ and $b \in [-96, -82]$

C. $a \in [-107, -99]$ and $b \in [48, 54]$

D. $a \in [-107, -99]$ and $b \in [-54, -49]$

E. $a \in [-83, -73]$ and $b \in [87, 95]$

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5. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

*COMPLEX CONJUGATE OF $-4+1i$ IS $-4-1i$

$$\frac{54 + 33i}{-4 + 1i} \cdot \frac{-4-1i}{-4-1i}$$

$a = \boxed{-10.76}$ $b = \boxed{-10.94}$

$= \frac{(54+33i)(-4-1i)}{(-4+1i)(-4-1i)}$

$= \frac{54(-4) + (54)(-1i) + 33i(-4) + (33i)(-1i)}{(-4)^2 + (1)^2}$

$= \frac{-216 - 54i - 132i - 33i^2}{16+1}$

A. $a \in [-16.6, -14.1]$ and $b \in [-7, 3]$

B. $a \in [-185.6, -182]$ and $b \in [-18, -8]$

C. $a \in [-12.1, -9.1]$ and $b \in [-18, -8]$

D. $a \in [-12.1, -9.1]$ and $b \in [-190, -183]$

E. $a \in [-13.9, -12.4]$ and $b \in [25, 35]$

$= \frac{-216 + (-54 - 132)i - 33(-1)}{17}$

$= \frac{-216 - 186i + 33}{17}$

$= \frac{-183 - 186i}{17}$

$= \frac{-183}{17} - \frac{186i}{17} \approx -10.76 - 10.94i$