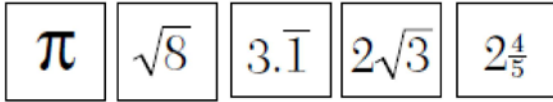


8.NS.A.2: Comparing Reals

- Which expression has the smallest value?
 - $-\pi$
 - $-\sqrt{10}$
 - $-\frac{16}{5}$
 - -3.02
- Which number has the greatest value?
 - $1\frac{2}{3}$
 - $\sqrt{2}$
 - $\frac{\pi}{2}$
 - 1.5
- In which list are the numbers in order from least to greatest?
 - $3.2, \pi, 3\frac{1}{3}, \sqrt{3}$
 - $\sqrt{3}, 3.2, \pi, 3\frac{1}{3}$
 - $\sqrt{3}, \pi, 3.2, 3\frac{1}{3}$
 - $3.2, 3\frac{1}{3}, \sqrt{3}, \pi$
- Which numbers are arranged from smallest to largest?
 - $3.14, \frac{22}{7}, \pi, \sqrt{9.1}$
 - $\sqrt{9.1}, \pi, 3.14, \frac{22}{7}$
 - $\sqrt{9.1}, 3.14, \frac{22}{7}, \pi$
 - $\sqrt{9.1}, 3.14, \pi, \frac{22}{7}$
- Which list is in order from smallest value to largest value?
 - $\sqrt{10}, \frac{22}{7}, \pi, 3.1$
 - $3.1, \frac{22}{7}, \pi, \sqrt{10}$
 - $\pi, \frac{22}{7}, 3.1, \sqrt{10}$
 - $3.1, \pi, \frac{22}{7}, \sqrt{10}$
- Which list shows the numbers $|-0.12|, \sqrt{\frac{1}{82}}, \frac{1}{8}, \frac{1}{9}$ in order from smallest to largest?
 - $|-0.12|, \frac{1}{8}, \frac{1}{9}, \sqrt{\frac{1}{82}}$
 - $\frac{1}{8}, \frac{1}{9}, \sqrt{\frac{1}{82}}, |-0.12|$
 - $\sqrt{\frac{1}{82}}, |-0.12|, \frac{1}{9}, \frac{1}{8}$
 - $\sqrt{\frac{1}{82}}, \frac{1}{9}, |-0.12|, \frac{1}{8}$
- In which group are the numbers arranged in order from smallest value to largest value?
 - $\pi, 3.14, \sqrt{9.86}, \frac{22}{7}$
 - $\sqrt{9.86}, \frac{22}{7}, 3.14, \pi$
 - $\frac{22}{7}, 3.14, \pi, \sqrt{9.86}$
 - $3.14, \sqrt{9.86}, \pi, \frac{22}{7}$
- Which is the correct arrangement of these terms in order of value, from smallest to greatest?
 - $3\sqrt{2}, 4\frac{1}{8}, |-4.24|, \sqrt[3]{75}$
 - $\sqrt[3]{75}, |-4.24|, 4\frac{1}{8}, 3\sqrt{2}$
 - $4\frac{1}{8}, \sqrt[3]{75}, |-4.24|, 3\sqrt{2}$
 - $4\frac{1}{8}, |-4.24|, \sqrt[3]{75}, 3\sqrt{2}$
- Which inequality is true if $x = \frac{3.04}{1.48}$, $y = 1.99 + 0.33$, and $z = (1.3)^3$?
 - $y < z < x$
 - $y < x < z$
 - $x < z < y$
 - $x < y < z$

- 10 Kyoko's mathematics teacher gave her the accompanying cards and asked her to arrange the cards in order from least to greatest. In what order should Kyoko arrange the cards?



- 11 Write the following numbers in order from smallest value to largest value: $\sqrt{3}$, $1\frac{2}{3}$, $\frac{3}{2}$, 1.75, 1
 Justify your answer.

- 12 For what value of t is $\frac{1}{\sqrt{t}} < \sqrt{t} < t$ true?

- 1) 1
- 2) 0
- 3) -1
- 4) 4

- 13 If $x^3 < x < \frac{1}{x}$, then x could be equal to

- 1) 1
- 2) 5
- 3) $\frac{6}{5}$
- 4) $\frac{1}{5}$

- 14 If $t < \sqrt{t}$, t could be

- 1) 0
- 2) 2
- 3) $\frac{1}{2}$
- 4) 4

- 15 If $t^2 < t < \sqrt{t}$, then t could be

- 1) $-\frac{1}{4}$
- 2) 0
- 3) $\frac{1}{4}$
- 4) 4

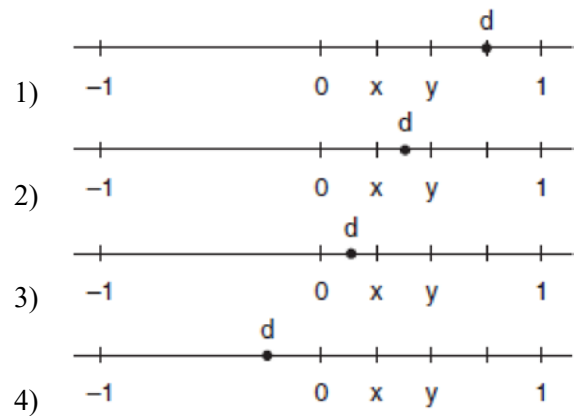
- 16 Show that the following can be ordered from smallest to largest for all $x > 1$. Describe the method you used and state the correct order.

$$1, \quad x, \quad \sqrt{x}, \quad \frac{1}{x}, \quad \text{and} \quad \frac{1}{\sqrt{x}}$$

- 17 If $a < b$, $c < d$, and a , b , c , and d are all greater than 0, which expression is always true?

- 1) $a - c + b - d = 0$
- 2) $a + c > b + d$
- 3) $\frac{a}{d} > \frac{b}{c}$
- 4) $ac < bd$

- 18 Let x and y be numbers such that $0 < x < y < 1$, and let $d = x - y$. Which graph could represent the location of d on the number line?



8.NS.A.2: Comparing Reals**Answer Section**

1 ANS: 3

$$-\frac{16}{5} = -3.20 < -\sqrt{10} \approx -3.16 < -\pi \approx -3.14 < -3.02$$

REF: 010526a

2 ANS: 1

$$1\frac{2}{3} \approx 1.67 < \frac{\pi}{2} \approx 1.57 < 1.5 = 1.50 < \sqrt{2} \approx 1.41$$

REF: 010002a

3 ANS: 3

$$\sqrt{3} \approx 1.7 < \pi \approx 3.1 < 3.2 = 3.2 < 3\frac{1}{3} \approx 3.3$$

REF: 010304a

4 ANS: 4

$$\sqrt{9.1} \approx 3.017 < 3.14 = 3.140 < \pi \approx 3.142 < \frac{22}{7} \approx 3.143$$

REF: 080516a

5 ANS: 4

$$\pi \approx 3.141 < \frac{22}{7} \approx 3.142 < 3.1 = 3.100 < \sqrt{10} \approx 3.162$$

REF: 060609a

6 ANS: 4

$$\sqrt{\frac{1}{82}} \approx .110 < \frac{1}{9} \approx .111 < |-0.12| = .120 < \frac{1}{8} = .125$$

REF: 080621a

7 ANS: 4

$$3.14 = 3.14000 < \sqrt{9.86} \approx 3.14006 < \pi \approx 3.14159 < \frac{22}{7} \approx 3.14286$$

REF: 010816a

8 ANS: 3

$$4\frac{1}{8} = 4.125 < \sqrt[3]{75} \approx 4.217 < |-4.24| = 4.240 < 3\sqrt{2} = 4.243$$

REF: fall9909b

9 ANS: 3

$$x = \frac{3.04}{1.48} \approx 2.1. \quad z = (1.3)^3 \approx 2.2. \quad y = 1.99 + 0.33 \approx 2.3$$

REF: 010213a

10 ANS:

$$2\frac{4}{5}, \sqrt{8}, 3.\bar{1}, \pi, 2\sqrt{3}. \quad 2\frac{4}{5} = 2.80 < \sqrt{8} \approx 2.83 < 3.\bar{1} \approx 3.11 < \pi \approx 3.14 < 2\sqrt{3} \approx 3.46$$

REF: 060433a

11 ANS:

$$1, \frac{3}{2}, 1\frac{2}{3}, \sqrt{3}, 1.75. \quad 1 = 1.00 < \frac{3}{2} = 1.50 < 1\frac{2}{3} = 1.67 < \sqrt{3} = 1.73 < 1.75 = 1.75$$

REF: 060835a

12 ANS: 4

REF: spring9813a

13 ANS: 4

$$\left(\frac{1}{5}\right)^3 < \frac{1}{5} < \sqrt{\frac{1}{5}}$$

$$.04 < .20 < .45$$

REF: 010512a

14 ANS: 3

$$t < \sqrt{t}$$

$$\frac{1}{2} < \sqrt{\frac{1}{2}}$$

$$.5 < .7$$

REF: 080717a

15 ANS: 3

$$\left(\frac{1}{4}\right)^3 < \frac{1}{4} < \sqrt{\frac{1}{4}}$$

$$\frac{1}{16} < \frac{1}{4} < \frac{1}{2}$$

REF: 069917a

16 ANS:

$$\frac{1}{x}, \frac{1}{\sqrt{x}}, 1, \sqrt{x}, x. \quad \text{If } x = 4, \frac{1}{4}, \frac{1}{\sqrt{4}}, 1, \sqrt{4}, 4$$

REF: fall9921b

17 ANS: 4

Cross-multiplying, $ac < bd$

REF: 080006a

18 ANS: 4

Because $x < y$, $x - y$ must be negative, so $d < 0$.

REF: 010120a