

NAME: \_\_\_\_\_

1. 060835a

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.

2. 060433a

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?

$\pi$	$\sqrt{8}$	$3.\bar{1}$	$2\sqrt{3}$	$2\frac{4}{5}$
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3. 010304a

In which list are the numbers in order from least to greatest?

[A]  $3.2, \pi, 3\frac{1}{3}, \sqrt{3}$       [B]  $\sqrt{3}, \pi, 3.2, 3\frac{1}{3}$

[C]  $3.2, 3\frac{1}{3}, \sqrt{3}, \pi$       [D]  $\sqrt{3}, 3.2, \pi, 3\frac{1}{3}$

4. 080516a

Which numbers are arranged from smallest to largest?

[A]  $3.14, \frac{22}{7}, \pi, \sqrt{9.1}$

[B]  $\sqrt{9.1}, \pi, 3.14, \frac{22}{7}$

[C]  $\sqrt{9.1}, 3.14, \frac{22}{7}, \pi$

[D]  $\sqrt{9.1}, 3.14, \pi, \frac{22}{7}$

5. 060609a

Which list is in order from smallest value to largest value?

[A]  $\sqrt{10}, \frac{22}{7}, \pi, 3.1$       [B]  $\pi, \frac{22}{7}, 3.1, \sqrt{10}$

[C]  $3.1, \frac{22}{7}, \pi, \sqrt{10}$       [D]  $3.1, \pi, \frac{22}{7}, \sqrt{10}$

6. 010816a

In which group are the numbers arranged in order from smallest value to largest value?

[A]  $\frac{22}{7}, 3.14, \pi, \sqrt{9.86}$

[B]  $\pi, 3.14, \sqrt{9.86}, \frac{22}{7}$

[C]  $3.14, \sqrt{9.86}, \pi, \frac{22}{7}$

[D]  $\sqrt{9.86}, \frac{22}{7}, 3.14, \pi$

7. 080621a

Which list shows the numbers

$|-0.12|, \sqrt{\frac{1}{82}}, \frac{1}{8}, \frac{1}{9}$  in order from smallest to largest?

[A]  $\frac{1}{8}, \frac{1}{9}, \sqrt{\frac{1}{82}}, |-0.12|$

[B]  $\sqrt{\frac{1}{82}}, \frac{1}{9}, |-0.12|, \frac{1}{8}$

[C]  $|-0.12|, \frac{1}{8}, \frac{1}{9}, \sqrt{\frac{1}{82}}$

[D]  $\sqrt{\frac{1}{82}}, |-0.12|, \frac{1}{9}, \frac{1}{8}$

8. fall9909b

Which is the correct arrangement of these terms in order of value, from smallest to greatest?

[A]  $4\frac{1}{8}, \sqrt[3]{75}, |-4.24|, 3\sqrt{2}$

[B]  $\sqrt[3]{75}, |-4.24|, 4\frac{1}{8}, 3\sqrt{2}$

[C]  $3\sqrt{2}, 4\frac{1}{8}, |-4.24|, \sqrt[3]{75}$

[D]  $4\frac{1}{8}, |-4.24|, \sqrt[3]{75}, 3\sqrt{2}$

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9. 010526a  
Which expression has the *smallest* value?

[A]  $-\pi$  [B]  $-\sqrt{10}$   
[C]  $-3.02$  [D]  $-\frac{16}{5}$

10. 010002a  
Which number has the greatest value?

[A]  $\sqrt{2}$  [B] 1.5 [C]  $\frac{\pi}{2}$  [D]  $1\frac{2}{3}$

11. 010213a  
Which inequality is true if  $x = \frac{3.04}{1.48}$ ,

$y = 1.99 + 0.33$ , and  $z = (1.3)^3$ ?

[A]  $x < y < z$  [B]  $y < z < x$   
[C]  $y < x < z$  [D]  $x < z < y$

12. 080717a  
If  $t < \sqrt{t}$ ,  $t$  could be

[A] 2 [B] 0 [C] 4 [D]  $\frac{1}{2}$

13. 069917a  
If  $t^2 < t < \sqrt{t}$ , then  $t$  could be

[A] 0 [B] 4 [C]  $-\frac{1}{4}$  [D]  $\frac{1}{4}$

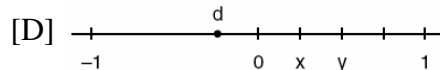
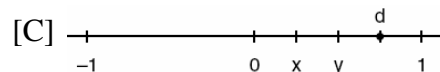
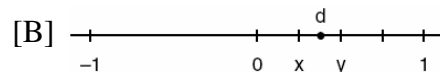
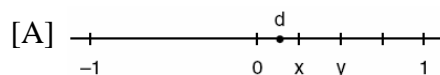
14. 010512a  
If  $x^3 < x < \frac{1}{x}$ , then  $x$  could be equal to

[A]  $\frac{6}{5}$  [B] 5 [C] 1 [D]  $\frac{1}{5}$

15. fall9921b  
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,  $x$ ,  $\sqrt{x}$ ,  $\frac{1}{x}$ , and  $\frac{1}{\sqrt{x}}$

16. 010120a  
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?



17. 080006a  
If  $a < b$ ,  $c < d$ , and  $a$ ,  $b$ ,  $c$ , and  $d$  are all greater than 0, which expression is always true?

[A]  $\frac{a}{d} > \frac{b}{c}$  [B]  $a + c > b + d$   
[C]  $ac < bd$  [D]  $a - c + b - d = 0$

18. 080213a  
How many times larger than  $\frac{1}{4}x$  is  $5x$ ?

[A]  $\frac{5}{4}$  [B] 9 [C] 20 [D]  $\frac{4}{5}$

[2]  $1, \frac{3}{2}, 1\frac{2}{3}, \sqrt{3}, 1.75$ , and an appropriate

justification is given, such as work that shows all the given numbers converted to decimals.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made, such as listing the numbers from largest to smallest.

or [1] An equivalent decimal value is found for all the numbers, but the numbers are not listed or are listed incorrectly.

or [1]  $1, \frac{3}{2}, 1\frac{2}{3}, \sqrt{3}, 1.75$ , but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[1] incorrect procedure.

[2]  $2\frac{4}{5}, \sqrt{8}, 3.\bar{1}, \pi, 2\sqrt{3}$  and appropriate

work is shown, such as converting each value to a decimal equivalent.

[1] All values are correctly converted to decimal equivalents, but the order is not indicated or is indicated incorrectly.

or [1] One or two computational errors are made in finding decimal equivalents, but the appropriate order is indicated.

or [1] Appropriate work is shown, but one conceptual error is made, such as indicating the order from greatest to least.

or [1]  $2\frac{4}{5}, \sqrt{8}, 3.\bar{1}, \pi, 2\sqrt{3}$ , but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

[3] B

[4] D

[5] D

[6] C

[7] B

[8] A

[9] D

[10] D

[11] D

[12] D

[13] D

[14] D

[2]  $\frac{1}{x}, \frac{1}{\sqrt{x}}, 1, \sqrt{x}, x$

Explanation:  $\sqrt{x}$  is less than  $x$ , therefore  $x > \sqrt{x}$  for values  $x > 1$ ; also expressed as a fraction  $\frac{1}{\sqrt{x}} > \frac{1}{x}$  since for unit fractions the

larger the denominator, the smaller the fraction.

or [2] Equivalent explanation.

or [2] Uses a numerical value for  $x$  to establish order and then ranks the correctly in terms of  $x$ .

[1] Correct answer with no explanation.

or [1] At least three in the correct order with some supporting explanation.

or [1] Correctly orders an answer using a numerical value rather than "in terms of  $x$ "

such as if  $x = 4$  the order would be  $\frac{1}{4}, \frac{1}{2}, 1, 2, 4$ .

[0] Response is completely incorrect, irrelevant, or incoherent; or is a correct response that was obtained by an obviously

[15] incorrect procedure.

[16] D

[17] C

[18] C