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Properties of Irrational Numbers Assignment Math 8

ANSWERS

Identify if the answer will be rational or irrational.

1. $\pi + 2$

$\pi + 2 = 3.14159 \ldots \ldots + 2 = 5.14158 \ldots ..$

Irrational

2. $\sqrt{7} - \sqrt{6}$

$\sqrt{7} - \sqrt{6} = 2.64575 \ldots - 2.4494 \ldots \ldots$
$\sqrt{7} - \sqrt{6} = 2.6454 \ldots \ldots \ldots$

Irrational

3. $\sqrt{15} * \frac{1}{\sqrt{15}}$

$\sqrt{15} * \frac{1}{\sqrt{15}} = 1$

Rational

4. $\sqrt{5} \div \sqrt{2}$

$\sqrt{5} \div \sqrt{2}$
$2.2360 \ldots . \div 1.41421 \ldots = 1.58109 \ldots \ldots \ldots$

Irrational

5. $32\pi + (0.5\pi + 12.35)$

$32\pi + (0.5\pi + 12.35) =$
$= 32 * \pi + (0.5 * 3.14159 + 12.35) \ldots \ldots$
$= 32 * \pi + (1.5708 \ldots . . + 12.35)$
$= 32 * \pi + 13.9207 \ldots ..$
$= 32 * 3.14159 \ldots \ldots + 13.9207 \ldots ..$
$= 100.5309 . . \ldots \ldots + 13.9207 \ldots$
$= 114.4516 \ldots \ldots ..$

Irrational

6. $3 - \sqrt{8}$

$(3 - \sqrt{8}) + 12 =$
$= (3 - 2.8284 \ldots . .) + 12$
$= 0.1715 \ldots \ldots . + 12$
$= 12.1715 \ldots \ldots$

Irrational

7. $\sqrt{111} * \frac{1}{\sqrt{111}} + 1$

$\sqrt{111} * \frac{1}{\sqrt{111}} + 1 =$
$= 1 + 1 =$
$= 2$

Rational

8. $\sqrt{31} - \sqrt{31} + \sqrt{31}$

$\sqrt{31} - \sqrt{31} + \sqrt{31} =$
$= 0 + \sqrt{31}$
$= \sqrt{31}$

Irrational

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9. $(1.237 - 8) * \frac{1}{\sqrt{12}}$

$(1.237 - 8) * \frac{1}{\sqrt{12}} =$
$= -6.7621. * \frac{1}{\sqrt{4 * 3}} =$
$= -6.7621 * \frac{3 * 2}{2\sqrt{3}} =$
$= -6.7621 * \frac{3}{\sqrt{3}}$
$= -20.2863 * \frac{1}{\sqrt{3}}$

Irrational

10. $\sqrt{7} * \sqrt{7} * \sqrt{7} * \sqrt{7}$

$\sqrt{7} * \sqrt{7} * \sqrt{7} * \sqrt{7} =$
$= 7 * 7$
$= 49$

Rational

11. $12 - (\sqrt{41})^3$

$12 - (\sqrt{41})^3 =$
$= 12 - 41\sqrt{41} \ldots . =$
$= 12 - 41 * 6.4031 \ldots \ldots$
$= 12 - 262.5280 \ldots \ldots$
$= -250.5280 \ldots$

Irrational

12. $\sqrt{133} \div \sqrt{133} * \sqrt{133}$

$\sqrt{133} \div \sqrt{133} * \sqrt{133} =$
$= 1 * \sqrt{133}$
$= \sqrt{133}$

Irrational

Insert a rational and an irrational number between each numbers

13. 4 and 5

$\frac{4 + 5}{2} = \frac{9}{2} = 4.5$ **Rational**

$\sqrt{4 * 5} = 2\sqrt{5}$ **Irrational**

14. 5 and 7

$\frac{5 + 7}{2} = \frac{12}{2} = 6$ **Rational**

$\sqrt{5 * 7} = \sqrt{35}$ **Irrational**

15. 11 and 13

$\frac{11 + 13}{2} = \frac{24}{2} = 12$ **Rational**

16. 5 and 6

$\frac{5 + 6}{2} = \frac{11}{2} = 5.5$ **Rational**

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$\sqrt{11 * 13} = \sqrt{143}$ **Irrational**

$\sqrt{5 * 6} = \sqrt{30}$ **Irrational**

17. **10** and **11**

$\frac{10 + 11}{2} = \frac{21}{2} = 10.5$ **Rational**

$\sqrt{10 * 11} = \sqrt{110}$ **Irrational**

18. **45** and **46**

$\frac{45 + 46}{2} = \frac{91}{2} = 45.5$ **Rational**

$\sqrt{45 * 46} = \sqrt{2,070}$ **Irrational**

19. **8** and **9**

$\frac{8 + 9}{2} = \frac{17}{2} = 8.5$ **Rational**

$\sqrt{8 * 9} = 6\sqrt{2}$ **Irrational**

20. **15** and **16**

$\frac{15 + 16}{2} = \frac{31}{2} = 15.5$ **Rational**

$\sqrt{15 * 16} = 4\sqrt{15}$ **Irrational**