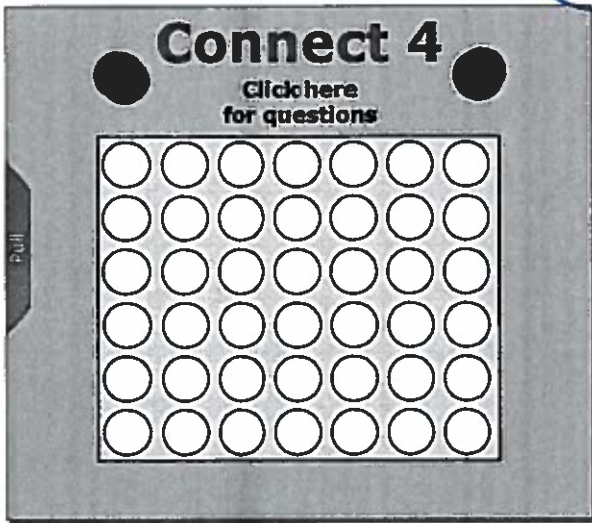
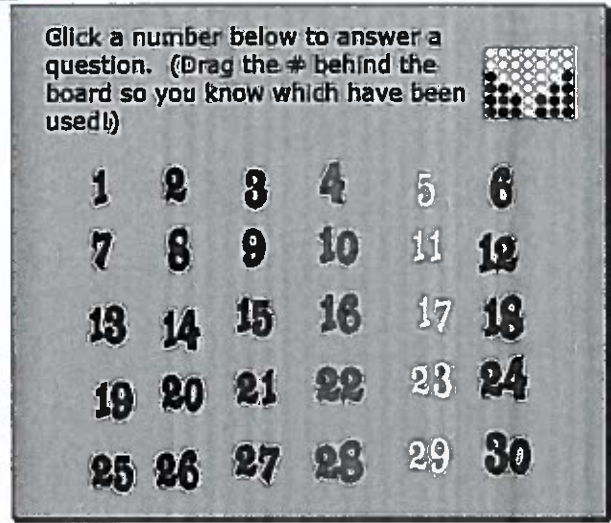


**KEY**



Gameboard



Questions

**1**

Simplify the radical expression. Use absolute value symbols if needed.

$$\sqrt{400x^2y^6}$$

$$20|xy^3|$$

Q1

**2**

Simplify the radical expression. Use absolute value symbols if needed.

$$\sqrt[3]{-125a^9}$$

$$-5a^3$$

Q2

**3**

Simplify the radical expression. Use absolute value symbols if needed.

$$\sqrt[4]{256x^{16}y^{28}}$$

$$4x^4|y^7|$$

Q3

**4**

Simplify each expression. Rationalize all denominators. Assume that all variables are positive.

$$\frac{\sqrt{200x^3y}}{\sqrt{2xy^5}} = \frac{\sqrt{100x^2}}{\sqrt{y^4}} = \frac{10x}{y^2}$$

Q4

5 calculator

Simplify each expression. Rationalize all denominators. Assume that all variables are positive.

$$(8 - 3\sqrt{2})(8 + 3\sqrt{2})$$

$$64 - 18$$

$$46$$

Q5

6

Simplify each expression. Rationalize all denominators. Assume that all variables are positive.

$$\frac{1}{\sqrt{3} + 5} \cdot \frac{(\sqrt{3} - 5)}{(\sqrt{3} - 5)}$$

$$= \frac{\sqrt{3} - 5}{-22}$$

Q6

7

Simplify each expression. Rationalize all denominators. Assume that all variables are positive.

$$\sqrt{63} + 2\sqrt{28} - 5\sqrt{7}$$

$$3\sqrt{7} + 4\sqrt{7} - 5\sqrt{7}$$

$$2\sqrt{7}$$

Q7

8

Simplify each expression. Rationalize all denominators. Assume that all variables are positive.

$$\frac{\sqrt[4]{5}}{\sqrt[4]{4}} \cdot \frac{\sqrt[4]{4}}{\sqrt[4]{4}} = \frac{\sqrt[4]{20}}{\cancel{4}}$$

$$\sqrt[4]{16} = 2$$

Q8

9 calculator

Simplify each expression. Assume that all variables are positive.

$$(-64)^{-\frac{2}{3}}$$

$$\left(\sqrt[3]{\frac{1}{(-64)}}\right)^2 = \frac{1}{(-4)^2} = \frac{1}{16}$$

Q9

10

Simplify each expression. Assume that all variables are positive.

$$a^{\frac{2}{3}} \cdot a^{\frac{1}{2}} = a^{\frac{7}{6}}$$

Add exponents

Q10

11



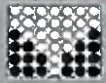
Simplify each expression.  
Assume that all variables are positive.

$$(4x^{-2}y^4)^{-\frac{1}{2}}$$

$$4^{-\frac{1}{2}} x^1 y^{-2} = \frac{x}{2y^2}$$

Q11

12



Simplify each expression.  
Assume that all variables are positive.

$$(8ab^2)^{-\frac{1}{2}} (8ab^2)^{\frac{1}{2}} = (8ab^2)^0 = 1$$

Q12

13



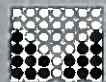
Simplify each expression.  
Assume that all variables are positive.

$$\left(s^{\frac{2}{5}} t^{\frac{1}{3}}\right) \left(s^{\frac{1}{2}} t^{\frac{1}{2}}\right)$$

$$s^{\frac{9}{10}} t^{\frac{5}{6}}$$

Q13

14



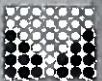
Solve each equation. Check for extraneous solutions.

$$(2x + 1)^{\frac{1}{3}} = 3$$

$$x = 13$$

Q14

15



Solve each equation. Check for extraneous solutions.

$$\sqrt{x^2 - 5} = 4$$

$$x = \pm\sqrt{21}$$

Q15

16



Solve each equation. Check for extraneous solutions.

$$\left(\sqrt{x+7}\right)^2 = (x+1)^2$$

$$x+7 = x^2 + 2x + 1$$

$$-x - 7 \quad -x - 7$$

$$x^2 + x - 6$$

$$(x+3)(x-2)$$

Q16

$$x = -3 \quad x = 2$$

ext.

17

Solve each equation. Check for extraneous solutions.

$$\frac{3(x+1)^{\frac{4}{3}}}{3} = \frac{48}{3}$$

$$(x+1)^{\frac{4}{3}} = 16^{\frac{3}{4}}$$

$$x+1 = (\pm 2)^3$$

$$x+1 = 8 \quad x+1 = -8$$

$x = 7$       Q17       $x = -9$

18

Let  $f(x) = x^2 + 5$  and  $g(x) = x - 7$ .  
 Perform each function operation.  
 Then find the domain of each.

$$\begin{array}{l} f(x) \\ g(x) \end{array} \begin{array}{l} x^2 + 5 \\ x - 7 \end{array}$$

D: all  $\mathbb{R}$ 's except 7

Q18

19

Let  $f(x) = x^2 + 5$  and  $g(x) = x - 7$ .  
 Perform each function operation.  
 Then find the domain of each.

$$f(x) - 2g(x)$$

$$(x^2 + 5) - 2(x - 7)$$

$$x^2 + 5 - 2x + 14$$

$x^2 - 2x + 19$       Q19

20

Let  $f(x) = x^2 + 5$  and  $g(x) = x - 7$ .  
 Perform each function operation.  
 Then find the domain of each.

$$f(x) \cdot g(x)$$

$$(x^2 + 5)(x - 7)$$

$x^3 - 7x^2 + 5x - 35$       Q20

21

Find  $f(g(x))$

$f(x) = 3x + 5, g(x) = x^2 + 1$

$$f(x^2 + 1) = 3(x^2 + 1) + 5$$

$$= 3x^2 + 3 + 5$$

$= 3x^2 + 8$       Q21

22

Find  $g(f(x))$ .

$f(x) = 3x + 5, g(x) = x^2 + 1$

$$g(3x + 5) = (3x + 5)^2 + 1$$

$$= (3x + 5)(3x + 5) + 1$$

$= 9x^2 + 30x + 26$       Q22

23

Find  $f(g(x))$

$f(x) = -2x^2, g(x) = x + 4$

$$f(x+4) = -2(x+4)^2$$

$$-2(x^2 + 8x + 16)$$

$$\underline{-2x^2 - 16x - 32}$$

Q23

24

Find  $g(f(x))$ .

$f(x) = -2x^2, g(x) = x + 4$

$$g(-2x^2) = \underline{-2x^2 + 4}$$

Q24

25

Find the inverse of each function.  
Is the inverse a function?

$f(x) = 3x + 2$

$x = 3y + 2$

$x - 2 = 3y$

$\underline{\frac{1}{3}x - \frac{2}{3} = y^{-1}}$

yes

Q25

26

Find the inverse of each function.  
Is the inverse a function?

$f(x) = (x + 2)^2 - 4$

$x = (y + 2)^2 - 4$

$\sqrt{x + 4} = \sqrt{(y + 2)^2}$

$\pm\sqrt{x + 4} = y + 2$

no

$\pm\sqrt{x + 4} - 2 = y$

Q26

27

Find the inverse of each function.  
Is the inverse a function?

$f(x) = \sqrt{x + 4}$

$(x) = (\sqrt{y + 4})^2$

$x^2 = y + 4$

$\underline{x^2 - 4 = y}$

$x \geq 0$

Q27

28

$f(-1) = -5 - 4 = -9$


Let  $f(x) = 5x - 4$  and  $g(x) = x^2 - 1$ .  
Find  $g(f(-1))$

$g(-9) = (-9)^2 + 1$

$81 + 1$

$\underline{82}$

Q28

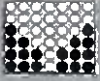
29 

Let  $f(x) = 5x - 4$  and  $g(x) = x^2 - 1$ .  
 Find  $f(g(2))$

$2^2 - 1$   
 $3$

$f(3) = 5 \cdot 3 - 4$   
 $= 15 - 4$   
 $= 11$

Q29

30 

Graph. Find the domain and range of each function.

$y = -\sqrt{x + 4} - 1$

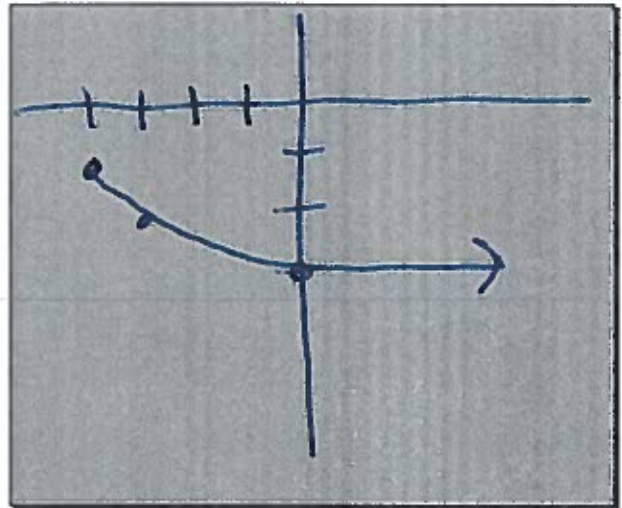
D:  $[-4, \infty)$   
 R:  $(-\infty, -1)$

Q30

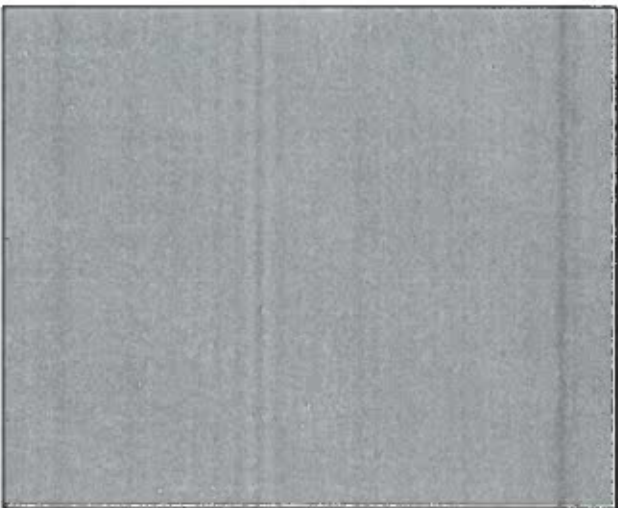
$(-4, -1)$



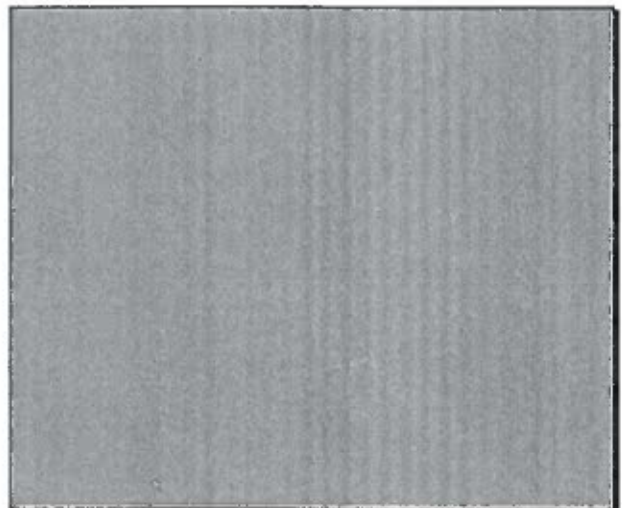
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