

Function Face-Off

Compare outputs from rules, tables, and points.

HIGH SCHOOL • HSF-IF.C

CCSS.Math.Content.HSF-IF.C "Analyze functions using different representations"

NAME _____

DATE _____

COMPARE AT ONE INPUT

Use the same input for both functions. Find both outputs, then compare them or subtract to find the difference.

WORKED EXAMPLE

A: $a(x)=13x+17$. B: $b(11)=158$. At $x=11$, which function has the larger output?

1. $a(11)=13(11)+17$
2. $a(11)=143+17=160$
3. $160-158=2$, so A is higher.

Answer: Function A, by 2.

PRACTICE 5 problems

- 1** P: $p(x)=3x+3$. Q: $q(3)=15$. At $x=3$, which output is larger?

ANSWER _____

- 2** R: $r(6)=14$. S: $s(x)=x+9$. At $x=6$, which output is larger?

ANSWER _____

- 3** Function U includes the point $(8,10)$. V: $v(x)=x+6$. At $x=8$, which output is larger?

ANSWER _____

- 4** M: $m(x)=x+6$. N: $n(9)=15$. At $x=9$, compare the outputs.

ANSWER _____

- 5** J: $j(x)=x+12$. Function K includes the point $(9,24)$. At $x=9$, which output is larger?

ANSWER _____

APPLY IT Show your work

- 1** Two game clubs track reward points after h volunteer hours. Club A has $A(h)=4h+12$. Club B has 27 points at 3 hours and 39 points at 6 hours. At 6 hours, which club has more points, and by how many?

WORK SPACE

ANSWER _____

- 2** You sell items through two resale apps. App A pays $E(s)=9s+6$ dollars after s sales. App B pays \$25 after 2 sales and \$43 after 4 sales. After 4 sales, which app pays more, and by how much?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Both functions are linear. A: $a(x)=3x+6$. Function B has the table x : 0, 3, 6 and $b(x)$: 9, 15, 21. At what x are the outputs equal? Explain which function is greater for inputs less than and greater than that value.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	P: $p(x)=3x+3$. Q: $q(3)=15$. At $x=3$, which output is larger?	Function Q, by 3.
2	R: $r(6)=14$. S: $s(x)=x+9$. At $x=6$, which output is larger?	Function S, by 1.
3	Function U includes the point (8,10). V: $v(x)=x+6$. At $x=8$, which output is larger?	Function V, by 4.
4	M: $m(x)=x+6$. N: $n(9)=15$. At $x=9$, compare the outputs.	The outputs are equal.
5	J: $j(x)=x+12$. Function K includes the point (9,24). At $x=9$, which output is larger?	Function K, by 3.

PART 2 • APPLY IT

- Club B has 3 more points.** $A(6)=4(6)+12=36$. Club B has 39 points, so $39-36=3$.
- App B pays \$1 more.** $E(4)=9(4)+6=42$. App B pays \$43, so the difference is \$1.

CHALLENGE

The outputs are equal at $x=3$. Function B is greater when $x<3$, and Function A is greater when $x>3$.

Accept equivalent comparison statements, such as "S exceeds R by 1." For the challenge, accept a correct explanation based on Function A increasing 3 per input unit while Function B increases 2 per input unit.