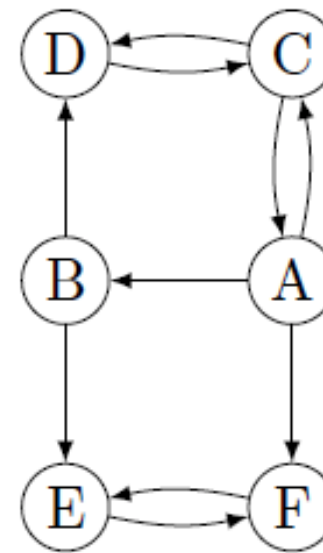
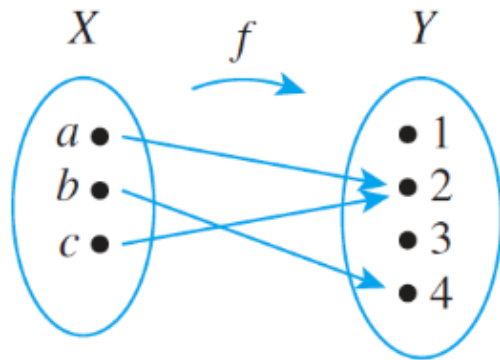


order of the graph's adjacency lists.



	Yes	No
(A,B) (A,F) (B,D) (B,E) (D,C)	<input type="radio"/>	<input checked="" type="radio"/> ✓
(A,B) (A,C) (A,F) (B,D) (F,E)	<input checked="" type="radio"/> ✓	<input type="radio"/>
(A,B) (A,C) (B,E) (C,D) (E,F)	<input type="radio"/>	<input checked="" type="radio"/> ✓
(A,B) (A,C) (A,F) (C,D) (F,E)	<input checked="" type="radio"/> ✓	<input type="radio"/>
(A,B) (A,C) (A,F) (B,E) (C,D)	<input checked="" type="radio"/> ✓	<input type="radio"/>

A function, f , is shown in the diagram below:



What is the range of f ? Select the correct answer below.

A $\{a, b, c\}$

B $\{2, 4\}$

C $\{1, 2, 3, 4\}$

D $\{2, 2, 4\}$



Consider the function

$$f(x) = \frac{99}{2x-50} + 31.$$

What is the range of the **inverse** function f^{-1} ? Write your answer as an integer between 0 and 99.



Range of f^{-1} : $\mathbb{R} \setminus \{ 25 \}$ ✓

Write the following as a single logarithm

$$\frac{1}{2}\log(x) + 3\log(y) - 4\log(x - y)$$

Write your answers as two integers between 0 and 99.

$$\log\left(\frac{\sqrt{x \cdot y^{\boxed{3}}}}{(x - y)^{\boxed{4}}}\right)$$



We want to find $3^{26} \bmod 11$ using the square and multiply algorithm. Fill in the missing values below in order to demonstrate correct use of the algorithm. If you only need to square, leave the non-squared box empty. State your answer as integers between 0 and 99.

$$\left[\begin{array}{lcl}
 1: & 3 & \equiv 3 \pmod{11} \\
 1: & \boxed{3}^2 \cdot \boxed{3} & \equiv \boxed{5} \pmod{11} \\
 0: & \boxed{5}^2 \cdot \boxed{} & \equiv 3 \pmod{11} \\
 1: & 3^2 \cdot \boxed{3} & \equiv \boxed{5} \pmod{11} \\
 0: & \boxed{5}^2 \cdot \boxed{} & \equiv \boxed{3} \pmod{11}
 \end{array} \right]$$



A person deposits \$4 in an account with a 5% interest which is compounded annually. Define a sequence $\{P_n\}_{n=0}$ such that $P_0 = 4$ is the initial account balance (in dollars), P_1 is the account balance after one year has passed, P_2 is the account balance after 2 years has passed and so on. What is the (rounded) value of P_{30} ? Write your answer as an integer between 0 and 99 (Note: you will need to round of the answer. Make sure you do so correctly!).



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A person deposits \$4 in an account with a 5% interest which is compounded annually. Define a sequence $\{P_n\}_{n=0}$ such that $P_0 = 4$ is the initial account balance (in dollars), P_1 is the account balance after one year has passed, P_2 is the account balance after 2 years has passed and so on. What is the (rounded) value of P_{30} ? Write your answer as an integer between 0 and 99 (Note: you will need to round of the answer. Make sure you do so correctly!).



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How many number between 1 and 112 are relatively prime to 112? Write your answer as an integer between 0 and 99.

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Check answer

Consider the congruence $ax \equiv 10 \pmod{27}$. It is known that the inverse of $a \pmod{27}$ is 11. Use this to determine the smallest positive value of x . State your answer as an integer between 0 and 99.

$$x = \boxed{2}$$



We want to find $4^{30} \bmod 9$ using the square and multiply algorithm. Fill in the missing values below in order to demonstrate correct use of the algorithm. If you only need to square, leave the non-squared box empty. State your answer as integers between 0 and 99.

$$\left[\begin{array}{l} 1: 4 \equiv 4 \pmod{9} \\ 1: \boxed{4}^2 \cdot \boxed{4} \equiv \boxed{1} \pmod{9} \\ 1: \boxed{1}^2 \cdot \boxed{4} \equiv 4 \pmod{9} \\ 1: 4^2 \cdot \boxed{4} \equiv \boxed{1} \pmod{9} \\ 0: \boxed{1}^2 \cdot \boxed{} \equiv \boxed{} \pmod{9} \end{array} \right]$$

