

Key

1. How many different three-member teams can be formed from six students?

1. 20
2. 120
3. 216
4. 720

$6C3$

2. Which expression is *not* equivalent to $8C5$?

1. 56
2. $8P5$
3. $8C3 = 56$
4. $\frac{8 \times 7 \times 6}{3 \times 2 \times 1} = 56$

$8C5 = 56$

3. How many different arrangements of seven letters can be made using the letters in the name "ULYSSES"?

1. 35
2. 70
3. 840
4. 5,040

$\frac{7!}{3!}$

$7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$
 ~~$3 \cdot 2 \cdot 1$~~

4. How many different six-letter permutations can be formed from the letters of the word "HUBBUB"?

1. 1
2. $\frac{6!}{3!2!}$
3. $\frac{6!}{5!}$
4. 3!

$\frac{6!}{3!2!}$

5. Find the value of $\sum_{x=0}^2 9^x$

1. 82
2. 90
3. 91
4. 99

0 9^0 1
1 9^1 9
2 9^2 81

$1 + 9 + 81 = 91$

6. Express the sum of $\sqrt{-64}$ and $3\sqrt{-4}$ as a monomial in terms of i .

1. $2i$
2. $14i$
3. $20i$
4. $48i$

$\sqrt{-64} + 3\sqrt{-4}$
 $i8 + 3 \cdot 2 \cdot i$
 $8i + 6i = 14i$

7. If $f(x) = x^3 - 2x^2$, then $f(i)$ is equivalent to

1. $-2+i$
2. $-2-i$
3. $2+i$
4. $2-i$

$f(i) = i^3 - 2(i^2)$
 $-i - 2(-1)$
 $-i + 2$
 $2-i$

8. What are the roots of the equation $2x^2 - 7x + 4 = 0$?

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(4)}}{2(2)} = \frac{7 \pm \sqrt{17}}{4}$

9. Solve $\frac{x+2}{4} = \frac{2}{x-2}$.

$(x+2)(x-2) = (4)(2)$
 $x^2 - 2x + 2x - 4 = 8$
 $x^2 - 4 = 8$
 $x^2 - 4 = 8$

$x^2 - 4 = 8$
 $x^2 = 12$
 $x = \pm\sqrt{12} = \pm 2\sqrt{3}$

10. Solve for x : $\sqrt{5x+2} - 3 = 0$

1. 1
2. $5/7$
3. $7/5$
4. $11/5$

$\sqrt{5x+2} - 3 = 0$
 $\sqrt{5x+2} = 3$
 $5x+2 = 9$
 $5x = 7$
 $x = \frac{7}{5}$

$h(x) = 2x - 1$ and $g(x) = 3x + 1$, what is $(h \circ g)(2)$?

$g(2) = 3(2) + 1 = 6 + 1 = 7$
 $h(7) = 2(7) - 1 = 14 - 1 = 13$

12. What is the solution set of the inequality $|2x-1| < 9$?

$|2x-1| < 9$
 $2x-1 < 9$
 $2x < 10$
 $x < 5$

$|2x-1| > -9$
 $2x-1 > -9$
 $2x > -8$
 $x > -4$

$-4 < x < 5$

