

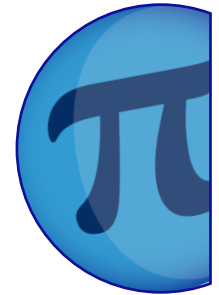


A Pattern in the Primes?

NAME:

CLASS:

DATE:



Basic

1) Give the next three numbers in the following number patterns.

a) 1, 4, 7, 10,

b) 1, 3, 5, 7,

c) 2, 5, 8, 11,

d) 4, 6, 8, 10,

e) 3, 6, 9, 12,

f) 1, 1, 2, 3, 5,

2) Pascal's Triangle is a famous number pattern. The first five rows of the triangle are found below. Complete the next three rows.

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
```

3) Using the same method, complete the next two rows in these triangles:

```
      2
     2 2
    2 4 2
   2 6 6 2
```

```
      3
     3 3
    3 6 3
   3 9 9 3
```



A Pattern in the Primes?

Basic

4) Circle all the prime numbers in the following list:

| | | | | |
|----|----|----|----|----|
| 17 | 11 | 2 | 75 | 37 |
| 81 | 7 | 39 | 51 | |
| 59 | 49 | 67 | 15 | 23 |
| 66 | 19 | 97 | 1 | |

5) From the above list of numbers calculate the probability of:

a) randomly choosing a prime number.

b) randomly choosing a multiple of 2.

c) randomly choosing a number less than 20.

d) randomly choosing a number greater than 100.

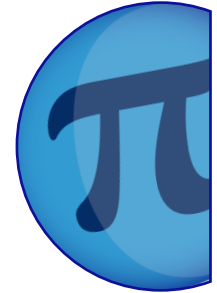


A Pattern in the Primes?

NAME:

CLASS:

DATE:



Core

1) Pascal's Triangle is a famous number pattern. The first five rows of the triangle are found below. Copy the triangle and complete the next three rows.

```

      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1

```

2) Using the same method, complete the next two rows in these triangles:

```

    2
   2 2
  2 4 2
 2 6 6 2

```

```

    3
   3 3
  3 6 3
 3 9 9 3

```

3) Circle all the prime numbers in the following list:

| | | | | |
|----|----|----|----|----|
| 17 | 11 | 2 | 75 | 37 |
| 81 | 7 | 39 | 51 | |
| 59 | 49 | 67 | 15 | 23 |
| 66 | 19 | 97 | 1 | |

4) From this list of numbers, calculate the probability of:

a) randomly choosing a prime number.

b) randomly choosing a multiple of 2.

c) randomly choosing a number less than 20.

d) randomly choosing a number greater than 100.

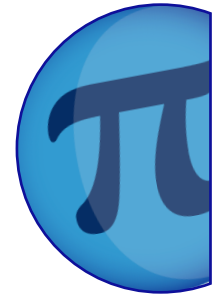


A Pattern in the Primes?

NAME:

CLASS:

DATE:



Advanced

1) Pascal's Triangle is a famous number pattern. The first five rows of the triangle are found below. Complete the next three rows.

```

      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1

```

2) Using the same method, complete the next three rows in these triangles:

```

    2
   2 2
  2 4 2
 2 6 6 2

```

```

    3
   3 3
  3 6 3
 3 9 9 3

```

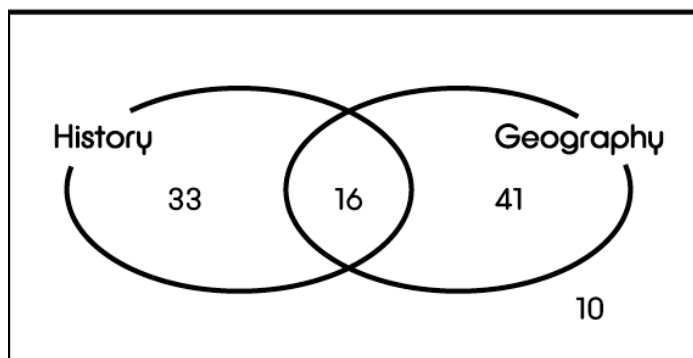
3) If a six-sided die is rolled 180 times, how many times would you expect to get:

a) a six?

b) a multiple of 3?

c) a prime number?

4) 100 students were asked if they are currently studying history or geography.



a) What is the probability that a student chosen at random studies only one of the subjects?

b) What is the probability that a student studying geography is also studying history?



A Pattern in the Primes?

ANSWERS

Basic

- 1) a) 13, 16, 19 b) 9, 11, 13 c) 14, 17, 20 d) 12, 14, 16
e) 15, 18, 21 f) 8, 13, 21

2)

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
```

3)

```
      2                3
     2 2              3 3
    2 4 2            3 6 3
   2 6 6 2          3 9 9 3
  2 8 12 8 2       3 12 18 12 3
 2 10 20 20 10 2  3 15 30 30 15 3
```

4)

| | | | | | |
|----|----|----|----|----|----|
| 17 | 11 | 2 | 75 | 37 | |
| 59 | 81 | 7 | 67 | 39 | 51 |
| | 49 | 19 | 15 | 23 | |
| 66 | | 97 | | 1 | |

- 5) a) $\frac{5}{9}$ b) $\frac{1}{9}$ c) $\frac{7}{18}$ d) 0



A Pattern in the Primes?

ANSWERS

Core

1)

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
```

2)

```
      2                3
     2 2              3 3
    2 4 2            3 6 3
   2 6 6 2          3 9 9 3
  2 8 12 8 2        3 12 18 12 3
 2 10 20 20 10 2   3 15 30 30 15 3
```

3)

| | | | | | |
|----|----|----|----|----|----|
| 17 | 11 | 2 | 75 | 37 | |
| 59 | 81 | 7 | 67 | 39 | 51 |
| | 49 | 19 | 15 | 23 | |
| 66 | | 97 | | 1 | |

4) a) $\frac{5}{9}$ b) $\frac{1}{9}$ c) $\frac{7}{18}$ d) 0



A Pattern in the Primes?

ANSWERS

Advanced

1)

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
```

2)

```
      2                3
     2 2              3 3
    2 4 2            3 6 3
   2 6 6 2          3 9 9 3
  2 8 12 8 2        3 12 18 12 3
 2 10 20 20 10 2   3 15 30 30 15 3
```

3) a) 30

b) 60

c) 90

4) a) $\frac{37}{50}$

b) $\frac{16}{57}$