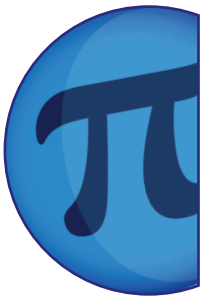
Set Theory: Cantor

NAME: .....

CLASS: .....

DATE: .....



Basic

1) Describe in words the following sets of numbers:

a) {2, 4, 6, 8, 10, 12…}

b) {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12...}

c) {1, 2, 4, 8, 16}

d) {1, 4, 9, 16, 25, 36…}

e) {10, 20, 30, 40}

f) $\left\{\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{5}{5}...\right\}$

g) {2, 3, 5, 7, 11, 13, 17, 19, 23…}

h) {3, 6, 9, 12, 15}

2) Which of the above sets are infinite?

3) Which of the above sets are finite?

4) List the groups of finite equivalent sets.

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Basic

5) List the following sets:

a) all multiples of 3

b) multiples of 5 less than 25

c) factors of 50

d) square numbers greater than 36

e) integers greater than 5 but less than 7

f) numbers that appear on a six-sided die

g) integers less than 0

6) Which of the above sets are infinite?

7) Which of the above sets are finite?

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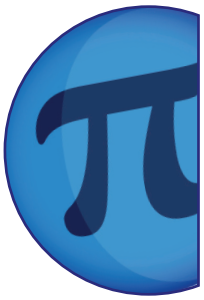

Core

1) List the following sets:

a) all multiples of 3

b) multiples of 5 less than 25

c) factors of 50

d) square numbers greater than 36

e) integers greater than 5 but less than 7

f) numbers that appear on a six-sided die

g) integers less than 0

2) Which of the above sets are infinite?

3) Which of the above sets are finite?

Set Theory: Cantor

Core

4) From the set of numbers: {3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20}, list the subsets.

a) multiples of 3

b) prime numbers

c) multiples of 2

d) square numbers

e) numbers less than 10

f) numbers greater than 20

g) factors of 16

h) even numbers

5) Which of the above subsets are equivalent?

6) Which of the above subsets are equal?

7) Which set can be represented by Ø?

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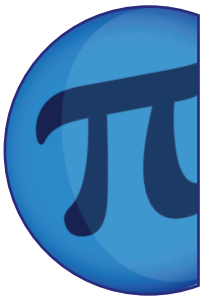

Advanced

1) From the set of numbers: {3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20}, list the subsets.

a) multiples of 3

b) prime numbers

c) multiples of 2

d) square numbers

e) numbers less than 10

f) numbers greater than 20

g) factors of 16

h) even numbers

2) Which of the above subsets are equivalent?

3) Which of the above subsets are equal?

4) Which set can be represented by Ø?

Set Theory: Cantor

Advanced

5) List the following sets of numbers:

a) A = $\{x : x$ is a multiple of 9$\}$

b) B = $\{x : x$ is a multiple of 5$\}$

c) C = $\{x : x$ is a factor of 12$\}$

d) D = $\{x : x$ is a square number$\}$

e) E = $\{x : x$ <100 & is a multiple of 10$\}$

f) F = $\{x : x$ is a factor of 97$\}$

6) Which of the above sets are infinite?

7) Which of the above sets are finite?

Set Theory: Cantor

ANSWERS

Basic

1) a) Multiples of 2
b) Numbers on a clock
c) Factors of 16
d) Square numbers
e) Multiples of 10 less than 50}
f) Proper fractions with 5 as a denominator
g) Prime numbers
h) Multiples of 3 less than 18

2) a, d, g

3) b, c, e, f, h

4) c, f, h

5) a) {3, 6, 9, 12, 15, 18}
b) {5, 10, 15, 20}
c) {1, 2, 5, 10, 25, 50}
d) {49, 64, 81, 100, 121…}
e) {6}
f) {1, 2, 3, 4, 5, 6}
g) {-1, -2, -3, -4, -5…}

6) a, d, g

7) b, c, e, f

Core

1) a) {3, 6, 9, 12, 15, 18}
b) {5, 10, 15, 20}
c) {1, 2, 5, 10, 25, 50}
d) {49, 64, 81, 100, 121…}
e) {6}
f) {1, 2, 3, 4, 5, 6}
g) {-1, -2, -3, -4, -5…}

2) a, d, g

3) b, c, e, f

4) a) {3, 6, 9, 12, 15, 18}
b) {3, 5, 7, 11, 13, 17, 19}
c) {4, 6, 8, 10, 12, 14, 16, 18, 20}
d) {4, 9, 16}
e) {3, 4, 5, 6, 7, 8, 9}
f) { }
g) {4, 8, 16}
h) {4, 6, 8, 10, 12, 14, 16, 18, 20}

5) b and e; c and h; d and g

6) c and f

7) e

Set Theory: Cantor

ANSWERS

Advanced

1) a) {3, 6, 9, 12, 15, 18}
b) {3, 5, 7, 11, 13, 17, 19}
c) {4, 6, 8, 10, 12, 14, 16, 18, 20}
d) {4, 9, 16}
e) {3, 4, 5, 6, 7, 8, 9}
f) { }
g) {4, 8, 16}
h) {4, 6, 8, 10, 12, 14, 16, 18, 20}

2) b and e; c and h; d and g

3) c and f

4) e

5) a) {9, 18, 27, 36, 45…}
b) {5, 10, 15, 20, 25…}
c) {1, 2, 3, 4, 6, 12}
d) {1, 4, 9, 16, 25…}
e) {10, 20, 30, 40, 50, 60, 70, 80, 90}
f) {1, 97}

6) a, b, d

7) c, e, f