

M. W. # 4.

1. $2! = 2 \cdot 1 = 2$

$3! = 3 \cdot 2 \cdot 1 = 6$

$4! = 4 \cdot 3 \cdot 2 \cdot 1 = 24$

$5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 120$

2. $99 \cdot 99! + 99! = 99!(99 + 1) = 99! \cdot 100 = 100!$

4. If a is a multiple of b
 $a = n \cdot b$ ($n \in \mathbb{N}$ (natural numbers))

if b is a multiple of c

$b = m \cdot c$ ($m \in \mathbb{N}$), \Rightarrow

$a = n \cdot b = n \cdot (m \cdot c) = n \cdot m \cdot c$

a is a multiple of c .

3. 21

a) $2 + 3a + xy + 4 - a + xy - 6 =$

$= 2 + 4 - 6 + 3a - a + xy + xy = 2a + 2xy$

b) $d - 4 + t + t + 3d + 3d = 4d + 2t + 28$

c) $x + 5s - 3s + 2x = 2s + 3x$

$$6. a) x \cdot \frac{3}{5} = \frac{2}{3}$$

$$x = \frac{2}{3} : \frac{3}{5} = \frac{2}{3} \cdot \frac{5}{3} = \frac{2}{3}$$

$$b) 3y + \frac{1}{2} = y + \frac{3}{2}$$

$$3y - y + \frac{1}{2} - \frac{1}{2} = y - y + \frac{3}{2} - \frac{1}{2}$$

$$2y = 1$$

$$y = \frac{1}{2}$$

$$c) \frac{1}{2}z + \frac{3}{4} = \frac{3}{2}z - \frac{1}{4}$$

$$\frac{3}{2}z - \frac{1}{4} = \frac{1}{2}z + \frac{3}{4}$$

$$\frac{3}{2}z - \frac{1}{2}z = \frac{3}{4} + \frac{1}{4}$$

$$z = 1$$

$$d) d: \frac{2}{3} + \frac{1}{2} = \frac{7}{8}$$

$$d: \frac{2}{3} = \frac{7}{8} - \frac{1}{2} = \frac{7}{8} - \frac{4}{8} = \frac{3}{8}$$

$$d = \frac{3}{8} \cdot \frac{2}{3} = \frac{2}{8} = \frac{1}{4}$$

7.

$$a) (9y-4) \cdot 3 = (9y-4) \cdot \frac{1}{2} + 5$$

$$9y-4=4$$

$$4 \cdot 3 = 4 \cdot \frac{1}{2} + 5$$

$$34 - \frac{1}{2}4 = 5$$

$$\frac{5}{2}4 = 5$$

$$4 = 5 : \frac{5}{2} = 5 \cdot \frac{2}{5} = 2$$

$$9y-4=2$$

$$9y=2+4=6$$

$$y=6:9=\frac{6}{9}=\frac{2}{3}$$

$$b) (9y-4) \cdot 3 = (9y-4) \cdot \frac{1}{2} + 5$$

$$27y-12 = \frac{9}{2}y - 2 + 5$$

$$27 - \frac{9}{2}y = 3 + 12 = 15$$

$$\frac{54-9}{2}y = 15$$

$$45y = 30$$

$$y = \frac{30}{45} = \frac{2}{3}$$

10.

$$1^{\text{st}} - 48 \text{ m.}$$

$$2^{\text{d}} - 1 \text{ h } 12 \text{ m} = 72 \text{ m.}$$

$$48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$$

$$72 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$$

$$\text{LCM}(48, 72) = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 = 144$$

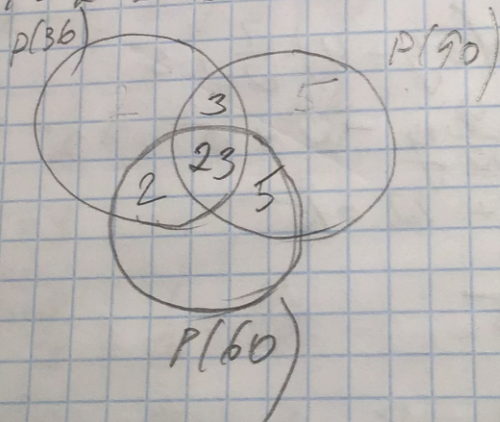
Buses will meet in 2 h 24 minutes

$$11 \quad 36 = 2 \cdot 2 \cdot 3 \cdot 3 = 2 \cdot 2 \cdot 3 \cdot 3$$

$$90 = 2 \cdot 3 \cdot 3 \cdot 5 = 2 \cdot 3 \cdot 3 \cdot 5$$

$$60 = 2 \cdot 2 \cdot 3 \cdot 5 = 2 \cdot 2 \cdot 3 \cdot 5$$

$$\text{GCF} = 2 \cdot 3 = 6$$



13. x is a number of books on the 1st
 y is a number of books on the 2nd
 z is a number of books on the 3rd

$$x + 6 = y + z$$

$$y + 10 = x + z.$$

We can add 2 equat.

$$x + 6 + y + 10 = y + z + x + z.$$

$$x + y + 16 = x + y + 2z.$$

We can subtract same expression from both sides

$$x + y - x - y + 16 = x + y - x - y + 2z.$$

$$2z = 16, z = 8.$$

There are 8 books on the 3rd shelf.

We can't say anything about x and y .

18. $H = \{2, 5, 6, 8, 12, 19, 24, 32, 45, 47\}$

a) $B = \{2, 5, 19, 47\}$ $B \subset A$.

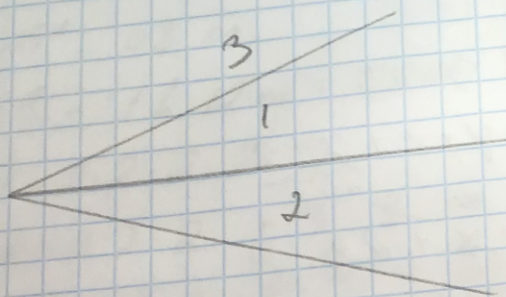
b) $C = \{6, 8, 12, 24, 32, 45\}$ $C \subset A$

c) $D = \{2, 6, 8, 12, 24\}$ $D \subset A$

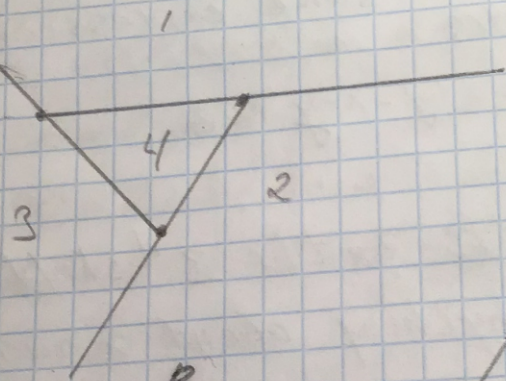
d) $E = \{5, 19, 45, 47\}$ $E \subset A$.

22.

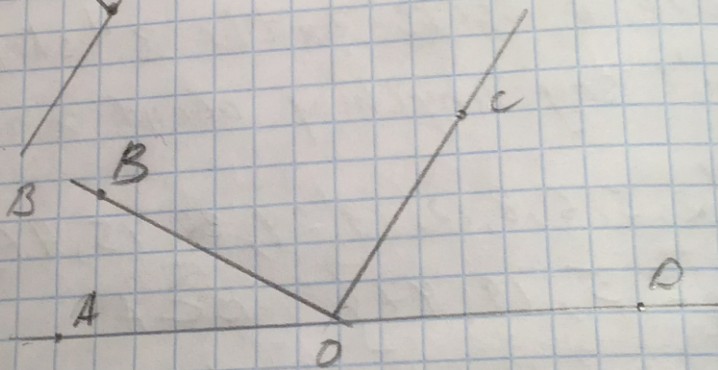
a)



b)



25.



$$\angle BOD = 152^\circ$$

$$\angle BOA = 180^\circ - 152^\circ = 128^\circ$$

$$\angle BOC = \angle BOD - \angle COD = 152^\circ - 55^\circ = 97^\circ$$

27. B.

