Accelerated math. Homework 8



Problems marked with * are more difficult.

1. Compute (you don't need to write the answer, just do it:

6 – 8	-6 + 8	-8 + (-6)	-24 - 7	-38 + 19
-12 + 4	-4 - 2	21 - 28	16 - (-6)	47 - 54
-3 - 6	9 + (-8)	-5 - (-7)	-37 + 18	-17 - 17
-7 + 10	4 - 7	-37 + 21	-9 + (-8)	0 - 38
10 + (-6)	-8 + 2	16 – 9	34 - 35	-18 + 36

- Draw triangle ABC with side |AB| = 4 cm, side |BC| = 6 cm, and side |CA| = 7 cm.
 On the side BC mark a midpoint M (use the marks on a ruler to measure the side BC, as well as to open the compass to the right angle). Draw a segment AM. AM is a median.
 Draw 2 other medians of the triangle ABC.
- Draw triangle KLM with sides |KL|=5 cm, |LM|=8 cm, and |MK|=10 cm. Using ruler triangle similar to the triangle on the picture or just two rulers draw all 3 altitudes in this triangle (remember, altitude – is a segment drawn from the vertex of the triangle to the opposite side on the right angle).



- 4. *Segment BM in the triangle ABC on the picture below, is a median. Prove, that the area of the triangle AMB is equal to the area of the triangle MBC. (Area of a triangle is equal to the half of the product of the altitude and the base to which this altitude is drawn,
 - $S_{\Delta} = \frac{1}{2}h \cdot a$, where *a* is the base and *h* is altitude)



|AM|=|MC|=*a*, because [BM] is a medina of the triangle. [BH] is an altitude, passing from vertex B to the base AC. The length of the

segment [BH] = *h*, and the segment [BH] is also the altitude for both triangles – ABM and MBC. Since the area of the triangle is $S_{\Delta} = \frac{1}{2} \cdot (altitude) \cdot (base)$ and for triangles ABM and MBC altitude is the same and the bases are equal, therefore areas also will be equal, $S_{\Delta} = \frac{1}{2} \cdot a \cdot h$.

5. Find coordinates of the points on each number line below.



- 3) B(0), C(25), D(40), F(-10), A(-25), E(-40)
- 4) $D(0), C\left(-\frac{4}{5}\right), A\left(-1\frac{3}{5}\right), B\left(\frac{4}{5}\right), E\left(1\frac{2}{5}\right), F\left(3\frac{1}{5}\right)$
- 6. Evaluate the following expressions in 2 ways: by first performing the operation in the parenthesis, and by first opening the parenthesis (follow the *example*:

$$34 - (3 - 4) = 34 - (-1) = 24 + 1 = 35$$

$$34 - (3 - 4) = 34 - 3 + 4 = 35$$
)

$$26 - (18 + (-7)), \qquad (3 - 23) - (4 - 10),$$

$$-84 - (-18 - 6), \qquad (-8 + 15) - (-6 - 20)$$

$$26 - (18 + (-7)) = 26 - (+11) = 26 - 11 = 15$$

$$26 - (18 + (-7)) = 26 - (18 - (-7)) = 26 - 18 + 7 = 15$$

$$-84 - (-18 - 6) = -84 - (-24) = -84 + 24 = -60$$

$$-84 - (-18 - 6) = -84 - (-18) - (-6) = -84 + 18 + 6 = -60$$

$$(3 - 23) - (4 - 10) = (-20) - (-6) = -20 + 6 = 14$$

$$(3 - 23) - (4 - 10) = 3 - 23 - 4 - (-10) = -20 - 4 + 10 = 14$$

$$(-8 + 15) - (-6 - 20) = 7 - (-26) = 7 + 26 = 33$$

$$(-8 + 15) - (-6 - 20) = -8 + 15 - (-6) - (-20) = -8 + 15 + 6 + 20 = 33$$

- 7. Solve the following equations:
 - $(x 12) \cdot 8 = 56;$ $24 \cdot (z + 9) = 288;$ (y + 25) : 8 = 16;

$(x-12)\cdot 8=56$	$24 \cdot (z+9) = 288$	(y + 25): 8 = 16
x - 12 = 56:8 = 7	z + 9 = 288: 24 = 12	$y + 25 = 16 \cdot 8 = 128$
x = 7 + 12 = 19	z = 12 - 9 = 3	y = 128 - 25 = 103
$(19 - 12) \cdot 8 = 56$	$24 \cdot (3+9) = 288$	(103 + 25): 8 = 16