Math 3 Honors

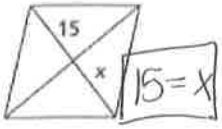
Unit 2 Test 2 Review

KEY

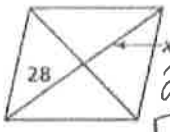
Practice 6-2

Properties of Parallelograms

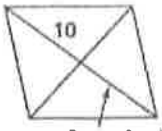
Find the value of x in each parallelogram.

1 

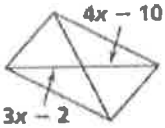
15 = x

2 

28 = x − 4
32 = x

3 

10 = 2x − 4
7 = x

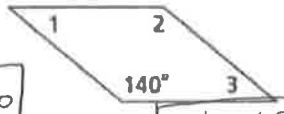
4 

3x − 2 = 4x − 10
8 = x

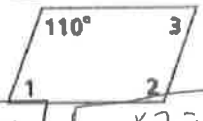
Find the measures of the numbered angles for each parallelogram.

5 

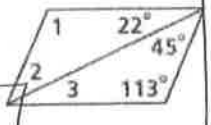
∠1 = 100°

6 

∠1 = ∠3 = 40°
∠2 = 140°

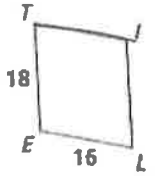
7 

∠2 = 110°
∠1 = ∠3 = 70°

8 

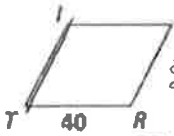
∠1 = 113°
∠2 = 45°
∠3 = 22°

Find the length of TI in each parallelogram.

9 

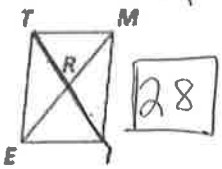
16

10 $OR = \frac{7}{8}IO$



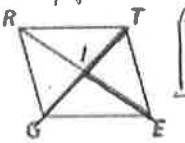
$\frac{7}{8}(40) = 35$
35

11 $TR = 14, ME = 31$



28

12 $IE = 8, GT = 8$

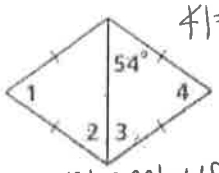


4

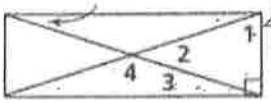
Practice 6-4

Special Parallelograms

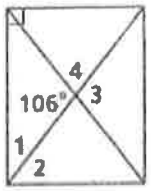
For each parallelogram, (a) choose the best name, and then (b) find the measures of the numbered angles.

13 

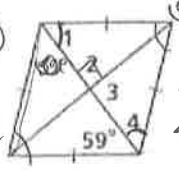
∠1 = ∠2 = ∠3 = ∠4 = 54°
Rhombus

14 

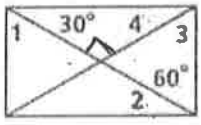
∠1 = 72° ∠2 = 36°
∠3 = 18°
∠4 = 144°
Rectangle

15 

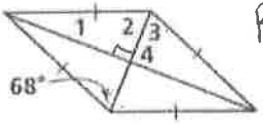
∠1 = 37°
Rectangle ∠2 = 53°
∠3 = 106°
∠4 = 74°

16 

∠1 = 59°
∠2 = 90°
∠3 = 90°
∠4 = 59°
Rhombus

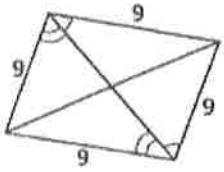
17 

Rectangle
∠1 = 60°
∠2 = 30°
∠3 = 30°
∠4 = 60°

18 

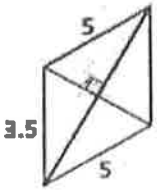
Rhombus
∠1 = 22°
∠2 = 68°
∠3 = 68°
∠4 = 90°

The parallelograms below are not drawn to scale. Can the parallelogram have the conditions marked? If not, write *impossible*. Explain your answer.

19 

no

20 
yes

21 

no

Station 3 KEY ID: 1

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Unit 2 Review Arithmetic Sequence

Determine if the sequence is arithmetic. If it is, find the common difference, the term named in the problem, and the recursive formula.

1) 9, 109, 209, 309, ...
Find a_{31}

$d = 100$
$a_{31} = 9 + 100(30) = 3{,}009$
$a_n = a_{n-1} + 100$

2) 40, 35, 30, 25, ...
Find a_{35}

$d = -5$
$a_{35} = 40 + -5(34) = -130$
$a_n = a_{n-1} - 5$

3) −3, 197, 397, 597, ...
Find a_{29}

$d = 200$
$a_{29} = -3 + 200(28) = 5{,}597$
$a_n = a_{n-1} + 200$

4) 29, 229, 429, 629, ...
Find a_{26}

$d = 200$
$a_{26} = 29 + 200(25) = 5{,}029$
$a_n = a_{n-1} + 200$

Determine if the sequence is arithmetic. If it is, find the common difference, the 52nd term, and the explicit formula.

5) 24, 32, 40, 48, ...

$d = 8$
$a_{52} = 432$
$a_n = 24 + 8(n-1)$

6) 17, 7, −3, −13, ...

$d = -10$
$a_{52} = -493$
$a_n = 17 + -10(n-1)$

7) −7, −4, −1, 2, ...

$d = 3$
$a_{52} = 146$
$a_n = -7 + 3(n-1)$

8) 39, 29, 19, 9, ...

$d = -10$
$a_{52} = -471$
$a_n = 39 + -10(n-1)$

Made with Infinite Algebra 2

Math 3 Honors KEM ID: 1

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Unit 2 Review Parallel & Perpendicular Lines

Write the slope-intercept form of the equation of the line described.

1) through: $(-2, 0)$, parallel to $y = 3x + 3$

$y = 3x - 2$

2) through: $(2, -2)$, parallel to $y = x + 3$

$y + 2 = x - 2 \rightarrow y = x - 4$

3) through: $(-4, -2)$, parallel to $y = \frac{3}{2}x$

$y + 2 = \frac{3}{2}(x + 4) \rightarrow y = \frac{3}{2}x + 4$

4) through: $(1, -4)$, parallel to $y = -5x - 1$

$y + 4 = -5(x - 1) \rightarrow y = -5x + 1$

★ 5) through: $(-2, -3)$, perp. to $x = 0$

$y + 3 = 0(x + 2) \rightarrow y = -3$

6) through: $(-1, 2)$, perp. to $y = -\frac{1}{3}x - 1$

$y - 2 = 3(x + 1) \rightarrow y = 3x + 5$

7) through: $(5, 3)$, perp. to $y = -\frac{3}{5}x + 1$

$y - 3 = \frac{5}{3}(x - 5) \rightarrow y = \frac{5}{3}x - \frac{16}{3}$

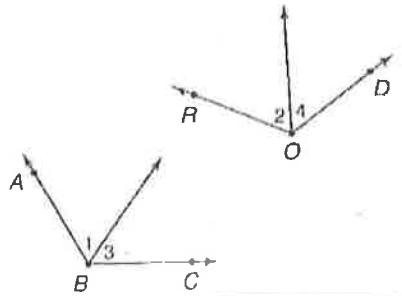
8) through: $(5, 3)$, perp. to $y = -\frac{5}{6}x + 5$

$y - 3 = \frac{6}{5}(x - 5) \rightarrow y = \frac{6}{5}x - 3$

Preparing for Two-Column Proofs

Complete each proof.

1. If $m\angle 1 = m\angle 2$ and $m\angle 3 = m\angle 4$, then $m\angle ABC = m\angle ROD$.



Given: $m\angle 1 = m\angle 2, m\angle 3 = m\angle 4$
Prove: $m\angle ABC = m\angle ROD$
Proof:

Statements	Reasons
a. $m\angle 1 = m\angle 2, m\angle 3 = m\angle 4$	a. Given
b. $m\angle ABC = m\angle 1 + m\angle 3$ $m\angle ROD = m\angle 2 + m\angle 4$	b. angle addition postulate
c. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 4$	c. substitution ★
d. $m\angle ABC = m\angle ROD$	d. substitution

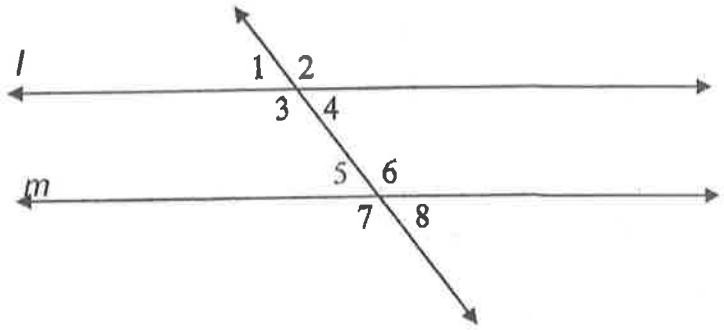
2. Prove that if $2(x - 3) = 8$, then $x = 7$.
Given: $2(x - 3) = 8$
Prove: $x = 7$
Proof:

Statements	Reasons
a. $2(x - 3) = 8$	a. Given
b. $2x - 6 = 8$	b. Distributive Prop. of =
c. $2x = 14$	c. Addition Prop. of =
d. $x = 7$	d. Division Prop. of =

see attached key

Parallel Line Proofs

Use the diagram for Questions 1-4.



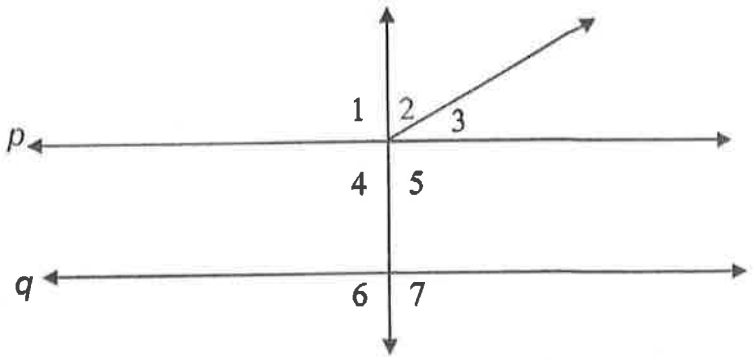
1. Given: l//m
   Prove: m∠1 = m∠8

2. Given: l//m
   Prove: m∠1 + m∠7 = 180°

3. Given: l//m
   Prove: ∠1 and ∠6 are supplementary.

4. Given: l//m
   Prove: ∠2 and ∠8 are supplementary.

Use the diagram for Questions 5-8.



5. Given: p//q, ∠5 is a right angle
   Prove: ∠1 is a right angle

6. Given: p//q, ∠5 is a right angle
   Prove: m∠2 + m∠3 = 90°

7. Given: p//q, ∠6≅∠7
   Prove: m∠1 = 90°

8. Given: p//q, m∠4 = m∠5
   Prove: ∠1 is a right angle

Parallel Line Proofs KEY

①

S	R
1. $l \parallel m$	1. given
2. $\angle 1 \cong \angle 8$	2. alt. ext.
3. $m\angle 1 = m\angle 8$	3. defn of congruence

②

S	R
1. $l \parallel m$	1. given
2. $\angle 1$ & $\angle 7$ Supp.	2. cons. ext.
3. $m\angle 1 + m\angle 7 = 180$	3. defn supp.

③

S	R
1. $l \parallel m$	1. given
2. $\angle 6 \cong \angle 7$	2. vertical
3. $\angle 1$ & $\angle 7$ supp	3. cons. ext.
4. $\angle 1$ & $\angle 6$ supp	4. sub.

④

S	R
1. $l \parallel m$	1. given
2. $\angle 2$ & $\angle 8$ supp	2. cons. ext

⑤

S	R
1. $p \parallel q$	1. given
2. $\angle 5$ is right	2. given
3. $\angle 5 \cong \angle 1$	3. vertical $\angle$s
4. $\angle$ is right	4. sub

KEY

(6)

S	R
1. $p \parallel q$	1. given
2. $\angle 5$ is right	2. given
3. $\angle 5 = 90°$	3. defn of right $\angle$
4. $\angle 5 = \angle 1$	4. vertical $\angle$
5. $\angle 1 + \angle 2 + \angle 3 = 180$	5. linear triple
6. $90 + \angle 2 + \angle 3 = 180$	6. sub.
7. $\angle 2 + \angle 3 = 90$	7. subtraction

(7)

S	R
1. $p \parallel q$	1. given
2. $\angle 6 \cong \angle 7$	2. given
3. $\angle 6 + \angle 7 = 180$	3. linear pair
4. $2\angle 6 = 180$	4. sub.
5. $\angle 6 = 90$	5. division
6. $\angle 7 = 90$	6. trans./sub.
7. $\angle 7 = \angle 1$	7. alt. ext.
8. $\angle 1 = 90$	8. trans./sub.

(8)

S	R
1. $p \parallel q$	1. given
2. $\angle 4 = \angle 5$	2. given
3. $\angle 4 + \angle 5 = 180$	3. linear pair
4. $2\angle 5 = 180$	4. sub.
5. $\angle 5 = 90$	5. division
6. $\angle 5 = \angle 1$	6. vertical $\angle$'s
7. $\angle 1 = 90$	7. trans/sub