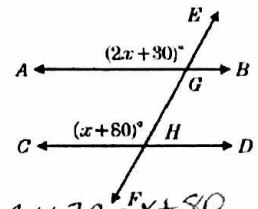
Math 3 Honors
Unit 5 Review - Reasoning with Geometry NAME KEY

**** Please sure to know ALL the properties for your test!**

Geometric Properties
Solve for x.

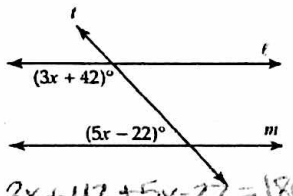
1.



$2x+30 \cong x+80$

$x = 50$

2.

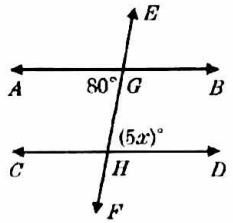


$3x+42+5x-22=180$

$8x+20=180$

$x=20$

3.

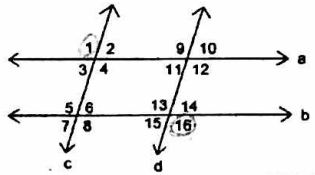


$5x=80$

$x=16$

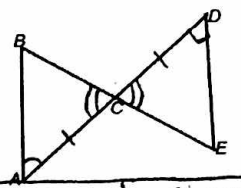
Proofs with Lines and Triangles

4. Given: a || b and c || d
Prove: ∠1 ≅ ∠16



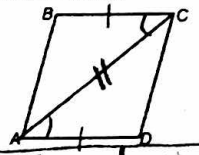
1. a‖b + c‖d	1. Given
2. ∠1 ≅ ∠5	2. corresponding angles
3. ∠5 ≅ ∠16	3. Alternate exterior angles
4. ∠1 ≅ ∠16	4. Transitive property

5. Given: C is the midpoint of $\overline{BE}$, ∠A ≅ ∠D
Prove: △ABC ≅ △DEC



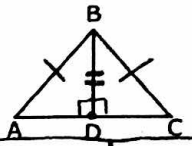
1. C is the midpt of $\overline{BE}$	1. Given
2. $\overline{AC} \cong \overline{CD}$	2. Def of midpt.
3. ∠A ≅ ∠D	3. Given
4. ∠BCA ≅ ∠DCE	4. Vertical ∠'s
5. △ABC ≅ △DEC	5. ASA

6. Given: $\overline{BC} \cong \overline{DA}$, $\overline{BC} \parallel \overline{DA}$
Prove: △ABC ≅ △CDA



1. $\overline{BC} \cong \overline{DA}$	1. Given
2. $\overline{BC} \parallel \overline{DA}$	2. Given
3. ∠CAD ≅ ∠BCA	3. Alternate Int. ∠'s
4. $\overline{AC} \cong \overline{AC}$	4. Reflexive
5. △ABC ≅ △CDA	5. SAS

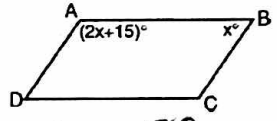
7. Given: $\overline{BD} \perp \overline{AC}$, $\overline{BA} \cong \overline{BC}$
Prove: △BAD ≅ △BCD



1. $\overline{BD} \perp \overline{AC}$	1. Given
2. ∠BDA = 90° + ∠BDC = 90°	2. Def. of ⊥ Lines
3. $\overline{BA} \cong \overline{BC}$	3. Given
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive Property
5. △BAD ≅ △BCD	5. HL

Properties of Parallelograms
Solve for x.

8.

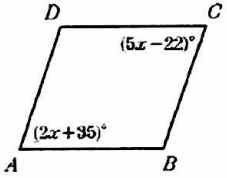


$2x+15+x=180$

$3x+15=180$

$x=55$

9.

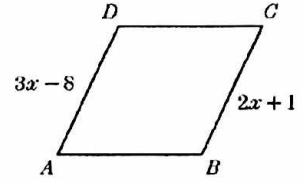


$5x-22=2x+35$

$3x=57$

$x=19$

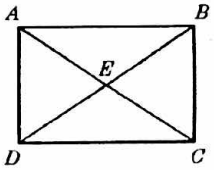
10.



$3x-8=2x+1$

$x=9$

11. $BD = 8x+4$ and $BE = 22$



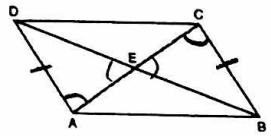
$8x+4=2(22)$

$8x+4=44$

$x=5$

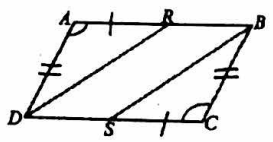
Proofs with Parallelograms

12. Given: ABCD is a parallelogram
Prove: △DEA ≅ △BEC



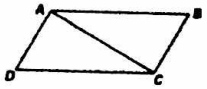
Statement:	Reason:
1. ABCD is a parallelogram	1. Given
2. $\overline{DA} \cong \overline{CB}$	2. Def of parallelogram
3. ∠DAC ≅ ∠BCA	3. Alt. Int. Angles
4. ∠AED ≅ ∠BEC	4. Vertical angles
5. △DEA ≅ △BEC	5. SAA

13. Given: ABCD is a parallelogram, $\overline{AR} \cong \overline{CS}$
Prove: △ARD ≅ △CSB



Statement:	Reason:
1. ABCD is a parallelogram	1. Given
2. $\overline{AR} \cong \overline{CS}$	2. Given
3. $\overline{AD} \cong \overline{BC}$	3. Def of parallelogram
4. ∠DAB ≅ ∠BCD	4. Def of parallelogram
5. △ARD ≅ △CSB	5. SAS

14. Given: ABCD is a parallelogram
Prove: ∠DAC ≅ ∠BCA

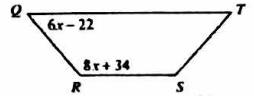


Statement:	Reason:
1. ABCD is a parallelogram	1. Given
2. $\overline{AB} \parallel \overline{DC}$	2. Def of parallelogram
3. ∠DAC ≅ ∠BCA	3. Alt. Int ∠s

Properties of Quadrilaterals

Solve for x (and y, if needed).

15. QTSR is a trapezoid.

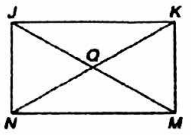


$6x-22+8x+34=180$

$14x+12=180$

$x=12$

16. KMNJ is a rectangle. $KN = 3x + 14$ and $JM = 38$

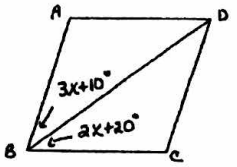


$3x+14=38$

$3x=24$

$x=8$

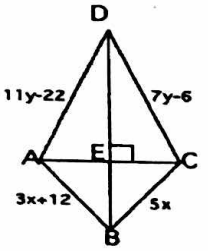
17. ABCD is a rhombus.



$3x+10=2x+20$

$x=10$

18. ABCD is a kite.



$11y-22=7y-6$

$\frac{4y}{4}=\frac{16}{4}$

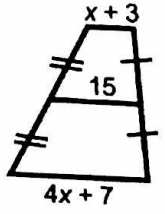
$y=4$

$5x=3x+12$

$\frac{2x}{2}=\frac{12}{2}$

$x=6$

19. Figure is a trapezoid.



$15=\frac{1}{2}(x+3+4x+7)$

$15=\frac{1}{2}(5x+10)$

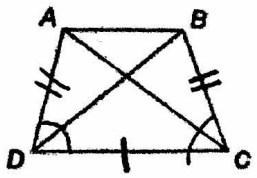
$15=\frac{5}{2}x+5$

$\left(\frac{2}{5}\right)10=\frac{2}{5}\cdot\frac{5}{2}x$

$4=x$

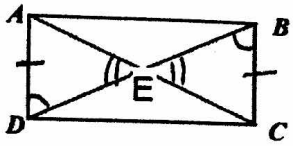
Proofs with Quadrilaterals

20. Given: ABCD is an isosceles trapezoid
Prove: $\triangle ADC \cong \triangle BCD$



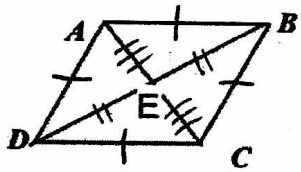
Statement:	Reason:
1. ABCD is an isosceles trapezoid	1. Given
2. $\angle ADC \cong \angle BCD$	2. Def of Isosceles Trapezoid
3. $\overline{DC} \cong \overline{DC}$	3. Reflexive
4. $\overline{AD} \cong \overline{BC}$	4. Legs of an isosceles trapezoid are congruent
5. $\triangle ADC \cong \triangle BCD$	5. SAS

21. Given: ABCD is a rectangle
Prove: $\triangle ADE \cong \triangle BCE$



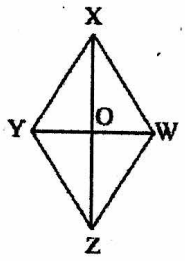
Statement:	Reason
1. ABCD is a rectangle	1. Given
2. $\overline{AD} \cong \overline{CB}$	2. Def of a rect.
3. $\overline{AB} \parallel \overline{DC}$	3. Def. of a rect.
4. $\angle ADE \cong \angle CBE$	4. Alt. Int. $\angle$'s
5. $\angle AED \cong \angle BEC$	5. Vertical $\angle$'s
6. $\triangle ADE \cong \triangle BCE$	6. SAA

22. Given: ABCD is a rhombus
Prove: $\triangle DEC \cong \triangle BEC$



Statement:	Reason:
1. ABCD is a rhombus	1. Given
2. $DC \cong BC$	2. Def. of rhombus
3. $\overline{ED} \cong \overline{BE}$, $\overline{AE} \cong \overline{EC}$	3. Diagonals bisect each other
4. $\triangle DEC \cong \triangle BEC$	4. SSS

23. Given: $\overline{YX} \cong \overline{WX}$, $\overline{ZX}$ bisects $\angle YXW$
Prove: $\overline{YO} \cong \overline{WO}$



Statement:	Reason
1. $\overline{YX} \cong \overline{WX}$, $\overline{ZX}$ bisects $\angle YXW$	1. Given
2. $\angle YXO \cong \angle WXZ$	2. Definition of bisect
3. $\overline{XO} \cong \overline{XO}$	3. Reflexive Property
4. $\triangle YXO \cong \triangle WXO$	4. SAS
5. $\overline{YO} \cong \overline{WO}$	5. CPCTC

Better name: $\angle WXO$