#### CHAPTER 8

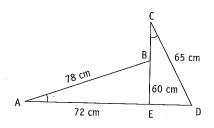
# Applications of geometrical properties

## Theoretical applications (1)

Question 1	In triangle ABC, D is a point on AB such that DB = DC. E is a point on AC such that DE bisectangle ADC. Show that DE is parallel to BC.				
	B				
	E C				

QUESTION **2** E is a point on AD and B a point on CE.  $\angle$ EAB =  $\angle$ ECD. AB = 78 cm. AE = 72 cm. CE = 60 cm. CD = 65 cm.

Prove that AD is perpendicular to CE.



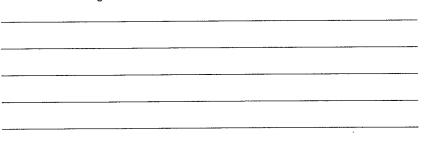
Hence show that B is the midpoint of CE.

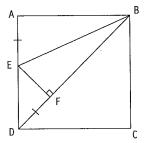
### Applications of geometrical properties

### Theoretical applications (2)

QUESTION  $\bf 1$  ABCD is a square. E is a point on side AD and F a point on diagonal BD such that EF is perpendicular to BD and DF = AE

a Show that triangle EFD is isosceles.

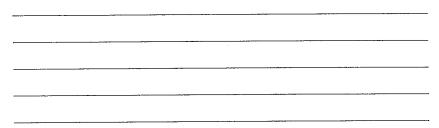


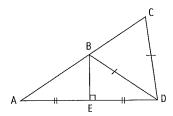


**b** Use congruent triangles to prove that BE bisects ∠ABD.


QUESTION 2 B is point on side AC and E a point on side AD of triangle ACD. BD = CD. AE = ED.  $BE \perp AD$ .

a Prove that  $\triangle ABE \equiv \triangle DBE$ 





**b** Prove that  $\angle ACD = 2 \angle BAE$ 

# Applications of geometrical properties

## Theoretical applications (3)



QUESTION 1 PQRS is a parallelogram. T	is a point on PQ such that QT = 2PT. PR and TS intersect at U.
Show that triangles PTU and RSU are s	
	P T
	s R
Show that $ST = 4TU$	
PUESTION <b>2</b> ABCD is a square. E is a po	pint on diagonal AC such that ED = EC.
Show this information on a diagram.	<ul><li>b Prove that triangle AED is right-angled.</li></ul>
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Page 194 1 (show that alternate angles are equal) 2 a (show that the triangles are similar) b (use Pythagoras' theorem)

Page 195 1 a (what is the size of  $\angle$ FDE?) b (RHS) 2 a (SAS) b (let  $\angle$ BAE =  $\alpha$ )

Page 196 1 a (equiangular) b (use corresponding sides of similar triangles) 2 a (see right) b (find the size of /FCD)

